

Effectiveness of Highway Safety Public Education at Montana Motor Vehicle Division and Vehicle Registration Stations by Streaming a Variety of Safety Content

Task 4 Report

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Acronym List

BZN	Bozeman
CHSP	Comprehensive Highway Safety Plan
COVID-19	Coronavirus pandemic
CTO	County Treasurer Office
DOJ	Department of Justice
EMS	Emergency Medical Services
FHWA	Federal Highway Administration
MDT	Montana Department of Transportation
MVD	Motor Vehicle Division
NHTSA	National Highway Traffic Safety Administration
SETT	Safety Enforcement Traffic Team
STEP	Selective Traffic Enforcement Program
TV	Television
WTI	Western Transportation Institute

1 Introduction

As state departments of transportation look to eliminate fatalities and serious injuries through initiatives like Toward Zero Deaths, it is important to utilize a 5E approach (engineering, emergency medical services (EMS), enforcement, education, and evaluation) to improve safety. Educating the public on safety initiatives helps to improve an area's traffic safety culture. Traffic Safety Culture is the shared beliefs (including values and assumptions) of a group that affect behaviors related to traffic safety. Traffic safety culture strategies, such as public awareness campaigns and safety videos, are an important way to educate the public and possibly change their beliefs and influence their behaviors. These strategies can be used to convey the need for and benefits of safety countermeasures (e.g., roundabouts and rumble strips), as well as the consequences of risky behaviors (e.g., texting while driving, driving while impaired, distracted driving, driving unbuckled, etc.).

The Montana Department of Transportation (MDT) finds value in educating Montanans about traffic safety. This project focused on displaying traffic safety videos during wait times at Motor Vehicle Division (MVD) driver license stations and county treasurer offices (CTOs). The project also encompassed an evaluation to identify if the strategy shows a change in traffic safety culture.

The objectives of this project are as follows:

- 1) Identify and secure already available traffic safety content (i.e., videos) (as opposed to creating new content) and purchase and deploy the appropriate equipment to display the traffic safety content
- 2) Survey the public to determine if they are paying attention to the videos shown at the MVD driver license stations and CTOs
- 3) Determine if the safety messages have an impact on the behavior of the viewing public

This report covers Task 4: Evaluation & Support. This task included equipment maintenance, creation of survey instruments, surveying (intercept and follow-up), analysis of survey data (intercept and follow-up), and documentation. Consequently, Task 4 seeks to address objectives 2 and 3 noted above.

This report discusses the literature reviewed in support of the task; describes the method used for the task; presents the data and analysis conducted on the intercept surveys succeeded by the follow-up surveys; and identifies conclusions and future research.

2 Literature Review & Information Gathering

This section highlights relevant aspects of MDT's media plan, MDT's Comprehensive Highway Safety Plan (CHSP), literature on traffic safety culture, and literature on learning styles.

2.1 MDT's Media Plan

As a part of their efforts to disseminate traffic safety information, MDT purchases media spots on broadcast radio, streaming services, social media, local media, and television. For FY21, there was an: 1) Alcohol Awareness Media Plan, 2) Holiday Montana Highway Safety Patrol Safety Enforcement Traffic Team (SETT) Selective Traffic Enforcement Program (STEP) Radio Media Plan, 3) September Mobilization National Highway Traffic Safety Administration (NHTSA) Plan, 4) 4th of July Impaired Driving, and 5) Labor Day – Impaired Driving Plan. All of the plans reported focusing on men, ages eighteen to thirty-four (twenty-one to thirty-four for the two impaired driving plans), for the dissemination of the information.

2.2 MDT's CHSP

MDT's current CHSP was completed in 2020 (Montana Department of Transportation (MDT), 2020). The four emphasis areas identified in the plan are: 1) roadway departure and intersection-related crashes, 2) impaired driving, 3) unrestrained vehicle occupant, and 4) emergency response – after-crash care. While only accounting for a small percentage of crashes (10%), impaired driving crashes account for a large portion of fatalities (60%). Just under ninety percent of Montanans were observed wearing seatbelts during a survey in 2019; unrestrained fatalities and serious injuries have declined over a ten-year period. The CHSP highlights that crashes involving older drivers and pedestrians have decreased since 2015. In contrast, younger drivers are “disproportionately represented in the total crash fatalities and serious injuries,” particularly those between the ages of twenty and twenty-nine. At least one change to policy was highlighted: non-use of child safety seats is a primary offense. The plan highlights “Vision Zero – a vision of zero fatalities and zero serious injuries on Montana's roadways.” A key element that the CHSP identified is needed to reach their goal is to collaborate across agencies. The plan discusses a goal of encouraging Montana's to “make safe driving choices.” The CHSP measures an improvement in traffic safety culture as “not accepting that loss of life is an expected cost of getting around.” It also highlighted the need to change the nomenclature from “accidents” to “crashes,” a relatively subtle but pointed distinction. The CHSP highlights the public health, economic and social impact of crash occurrence. At present, the CHSP does not try to parse out how traffic safety messages may be geared to specific localized areas within Montana, with the assumption that from a traffic safety culture perspective, Montana is not homogenous. The CHSP highlights that the months of July, August, and September (summer for Montana) are associated with the greatest number of roadway departure fatalities and serious injuries. Intersection crashes, in contrast, occur most during January, February and March (winter months). Defined within the strategies and opportunities for roadway departure and intersection-related crashes, #7 specifically identifies as an opportunity: “Research effectiveness of highway safety public education at Montana Motor Vehicle Division and Vehicle Registration Stations by streaming safety videos.” This project satisfies the identified strategy. The infographic, “What Will a DUI Cost You?” was also highlighted in the CHSP. Finally, Section 6.4 of the CHSP highlights the need to address the “risk of deaths and disability of [Emergency Medical Services] EMS professionals and other emergency responders.”

2.3 Traffic Safety Culture

Traffic safety culture is defined as a collection of underlying assumptions, beliefs, values, and points of view commonly shared by community members who interact with the community's structures and systems to influence road safety-related behaviors (Sujon & Dai, 2021).

An editorial by Ward and Ozkan discussed traffic safety culture (Ward & Ozkan, 2014). They began by identifying education, engineering, and enforcement as traditional safety strategies. They suggest that while these approaches have been effective, their impact is reduced over time. The article links behaviors to four cognitions and defines them:

1. "Values – the core ideals to which we aspire (e.g., protecting family)."
2. "Beliefs – the way we think the world works including the consequences of behaviors (e.g., "My drunk driving does not put anyone else at harm other than me") and our control over choosing behaviors (e.g., "The traffic around me determines my speed")."
3. "Perceived norms – the behaviors we think most people do (e.g., "None of my family wear their seatbelts") and condone ("Speeding is encouraged in my group of friends")."
4. "Attitudes – the adjectives we use to describe our preferences for certain behaviors or objects (e.g., good, bad, fun, exciting, useful, effective)."

Coogan et al. (Coogan, Campbell, Adler, & Forward, 2014) investigated the idea that risky drivers are not homogeneous; rather, there are sub-groups of risky drivers. The findings from Coogan et al.'s research suggest three sub-groups: excitement seeking and optimism bias; societal values denial; and rational justifications. Optimism bias, in the context of traffic safety, denies personal vulnerability. An example of a question from the survey that relates to this concept is: "The risk of dying in a traffic crash is so low that you can ignore it." Those in this group were described as the "least rural." The denying of societal values is the lack of altruism. An example of a question related to denying society value is: "Hurting someone else with my car would scar me for life." Those in this group were described as the "most urban." For those that use rational justifications, they believe that "restricting themselves to the speed limit" would be difficult. This group was described as "Determined, Calculated Speeders." A mix of urban, suburban, and rural geographic representations were included in this cluster. The analysis was based on 990 surveys of residents in three northeastern states (Maine, New Hampshire, Vermont).

Edwards et al. (Edwards, Freeman, Soole, & Watson, 2014) sought to better understand the differences between traffic safety culture and organizational safety culture, define components of traffic safety culture, and understand whether traffic safety culture can be changed. While traffic safety culture and organizational safety culture were found to be different applications, they were concluded to be drawn from the same foundational concept. Shared beliefs, attitudes, and values were identified as cultural factors, whereas community structures and systems were defined as contextual factors. They offer up work done in Australia, where traffic safety culture surrounding drinking and driving had been impacted, while speeding traffic safety culture has not changed.

Islam et al. (Islam, Thue, & Grekul, 2017) surveyed 1,012 residents in 2014 in the City of Edmonton, Canada and the surrounding suburbs to describe the traffic safety culture of the region. They describe an advantage of traffic safety culture as enabling a proactive approach to addressing safety meaning one does not have to wait for crash data to become available to develop strategies for improving safety. In particular, Islam et al. wanted to uncover public opinions with respect to distracted driving, impaired driving, and speeding issues. The results suggested that the public

does not understand the relationship between enforcement, law, policy, and the mitigation of threatening behaviors (i.e., speeding, driving while distracted, driving under impairment). The findings suggest that females, those who are married (or have common law partners), older individuals, and those living in the City of Edmonton (i.e., city dwellers) perceive more of a threat to personal safety from the three issues of focus (distracted driving, impaired driving and speeding). Those with higher levels of education perceived a lower threat to safety. Household size and the presence of children in the household were found to have indirect effects.

Responding to a significant increase in the number of crashes involving foreigners, Yoh et al. (Yoh, Uchiyama, Hung, & Doi, 2019) made use of videos to teach foreign visitors about driving in Japan. The videos were created in a style termed: “branded entertainment.” Branded entertainment is a blend of advertisement and entertainment. It emphasizes a viewer’s empathy with the characters in the video. Participants were recruited at a travel fair and asked to view a four-minute video (several lengths were created) and then take a questionnaire. Two important conclusions when considering this study were: 1) the length of the video is important to ensure both attracting and maintaining the viewer’s attention, and 2) one’s ability to find empathy with those in the video is correlated with a video’s appeal. Yoh et al. recommended delaying the follow-up to test the longer-term impact for future research.

Silva et al. (Silva, Laiz, & Tabak, 2020) conducted a study that focused on the overconfidence of undergraduate university students in Brazil from a traffic safety perspective. To impact their overconfidence, Silva et al. had participants watch traffic safety videos. They note that, “Films induce changes in participants’ emotional states, making them respond in different ways depending on the film content and form of exhibition.” The experiment employed four randomly assigned groups that related to the three types of videos: technical, punitive, shocking, and control (did not watch a video). The videos were similar in length. The technical video (from Europe) described what alcohol does to the body. The shocking video (from Australia) had “tense and life-threatening scenes.” The punitive video (from America) showed consequences and penalties of drinking and driving. All of the videos focused on discouraging driving under the influence. A questionnaire utilizing a Likert scale (i.e., Good, Fair, Poor (Brown, 2010)) was administered immediately after the students had watched the video. It was also given to the control group who did not watch the video. Similar to Yoh et al. (Yoh, Uchiyama, Hung, & Doi, 2019), there was no evaluation of whether the videos had a long-term effect. Silva et al. highlighted the values of using videos because they catch one’s attention. Only the shocking and punitive videos were found to be effective, with the shocking video having an impact to a greater degree. The technical video group and control group were found to have similar results, suggesting no impact on changing behavior by the technical video. When considering gender, Silva et al. reported that punitive videos were found to be effective in influencing the behavior of female students but not of male students.

Sojuon and Dai (Sujon & Dai, 2021) leveraged data from social media (Twitter) to define the traffic safety culture in Washington State. In particular, they wanted to better understand people’s beliefs and attitudes towards high-risk behaviors (impaired driving, speeding, distracted driving, unrestrained vehicle occupants, teenage drivers, and older drivers). Four questions were identified as priorities: 1) “Do we all see traffic safety as an important issue for most people in our communities?” 2) “Do we all believe it is possible to prevent fatal and serious injury crashes?” 3) “Do we all have the attitude that police enforcement of traffic laws is beneficial?”, and 4) “What are the public’s attitudes towards high-risk behaviors that involve impairment, speeding, distractions, unrestrained vehicle occupants, young drivers, and older drivers?” Tweets from March 2015 through February 2019 were used. A total of 210,335 data files, each consisting of 10 minutes’ worth of data were analyzed. Keywords were identified that prioritized which tweets

were purchased for analysis. The following are findings from Sojuon and Dai's work: 1) just over half of Washington residents (55%) recognized the importance of traffic safety in their daily lives, while thirty percent placed little priority and fifteen percent had a neutral viewpoint; 2) the data captured an increase in the importance of traffic safety from March of 2015 to February of 2019 (40% to 60%), although the more recent data suggests a plateauing of this viewpoint; 3) the public generally held neutral and negative attitudes towards the idea of preventing fatal and serious injury crashes; and 5) the public generally held a negative viewpoint regarding police enforcement of traffic laws. Two noted drawbacks include the inability to identify the qualitative geographic location (rural, suburban, urban) of users, and not being able to associate demographic information (age, race, gender, education, income level) with viewpoints, which may allow a traffic safety agency to better target future messaging.

The AAA Foundation for Traffic Safety conducted their thirteenth annual Traffic Safety Culture Index (AAA Foundation for Traffic Safety, 2021) in 2020. Survey responses from 2,800 U.S. motorists, collected between October 23 and November 23, 2020, were used to draw the conclusions. In 2020, motor vehicle fatalities increased by seven percent. Driving without seat belts, impaired driving, and speeding were identified as primary contributors for this increase. It has been suggested that drivers have not changed their perception of associated danger; rather, there was a significant change in the belief as to whether or not one would be apprehended if they exhibited these behaviors.

Benzaman et al. (Benzaman, Ward, & Schell, 2022) developed regression models for every state within the United States whose error term was assumed to encompass traffic safety culture. The developed model identified physical environment (average annual temperature), social environment (unemployment rate, seatbelt law, cellphone law, number of beds in community hospitals, state population, physicians per 1,000 residents, percentage of votes for Democratic and Republican candidates), system hazards (length of rural classified roads), and behavioral hazards (proportion of inattentive driving crashes, annual average consumption of alcohol in gallons) that all contributed to the predicted crash fatality rate. Overall, the model fit was 13.81%, which is relatively poor. However, the authors suggested that it is not unexpected as the model represents human behavior. The authors suggested that race and ethnicity as a cultural factor may impact traffic safety culture and would be a desirable variable to include, however there was limited data to work from.

2.4 Learning Styles

Jabbour (Jabbour, 2012) discussed findings related to multimedia education. Within the document, graphics were defined as being pictures, drawings, diagrams, charts, animations, videos or simulations. Graphics were further defined as being static (drawings or photos) or dynamic (an animation or video). Texts could be either spoken or printed. The article also discussed the three types of human memories: sensory memory, working memory, and long-term memory. Sensory memory makes use of information obtained through the five senses (sight, hearing, smell, taste, and touch). Working memory can only store seven pieces of information at a time. Without rehearsal of the information, it cannot be transferred into long-term memory. Long-term memory permanently stores the information that can be drawn from later. The cognitive theory of learning has suggested two channels: visual and auditory. Both graphics and printed texts must be processed via the visual channel; the auditory channel is not engaged. The cognitive theory suggests that instruction provided via spoken text *and* graphics is more effective. The article also suggests that those who are less familiar with the content benefit more by a combination of information disseminated via the visual and auditory channels, as it helps to minimize the cognitive load.

3 Task Methodology

The objective of this research project is to create video sequences that can be displayed on televisions (TVs) at MVD stations and CTOs to convey traffic safety information to the public who visit these facilities. CTOs were used in cooperation with MVD stations, as in more rural Montana counties, CTOs may also be used as driver license stations.

One of the initial tasks was to choose the locations around the state where the project would be conducted. Within the budget of the project, considerations were made to use locations that would obtain a wider demographic cross-section of Montanans, have a large enough volume of customers, have a suitable location to install the TV, and be in relative proximity to research staff to carry out survey activities. Five locations were selected (Figure 1): Billings, Bozeman, and Kalispell MVD stations and CTOs located in Bozeman and Helena. A single, consistent surveyor was present at the Billings, Helena, and Kalispell facilities. Three different surveyors collected data at the Bozeman locations. Four of the five surveyor administrators were female; one was male. Four of the five survey administrators were professional staff; one was an undergraduate student. It is possible that the gender or age of surveyors impacted whether or not a customer at one of the facilities was willing to participate. To read more about the equipment and locations see Task Tech Memos #2-3.

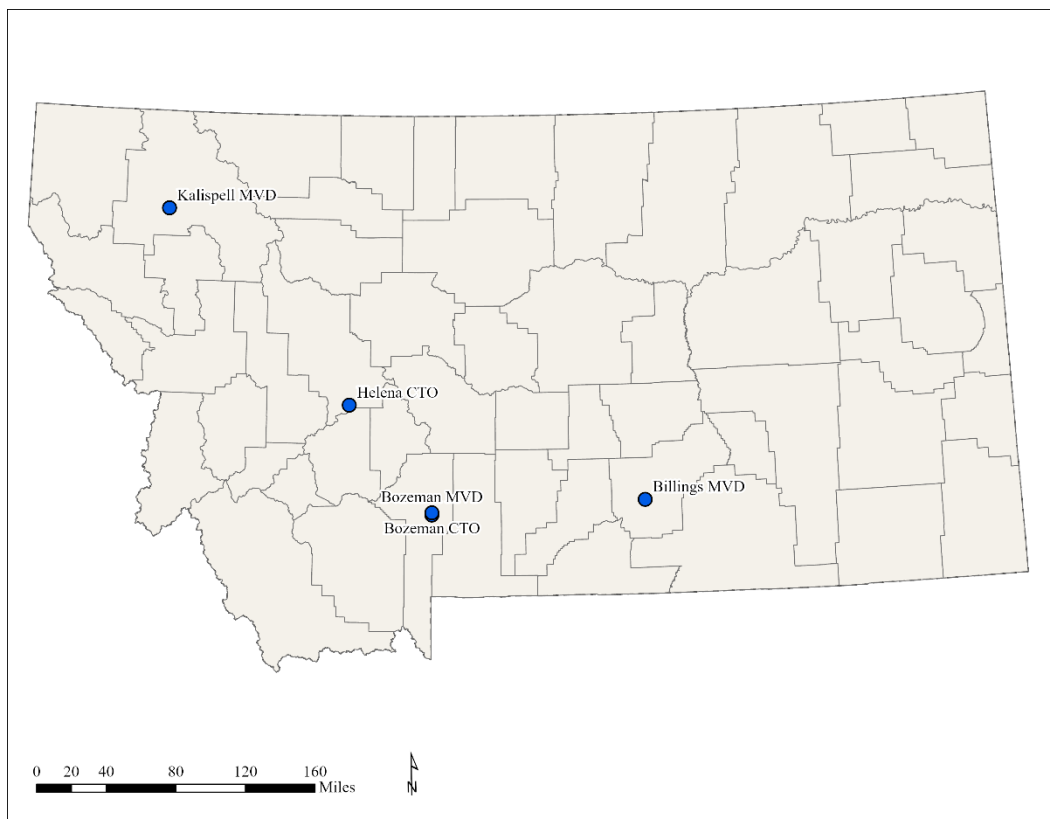


Figure 1: Five locations of video deployment and data collection.

To begin, the researchers investigated and tested various equipment that could be used. After the locations were chosen, the researchers worked with on-site staff to determine where to install the TVs within each facility (pre-coronavirus pandemic (COVID-19)).

Four storyboards depicting various safety messages were developed. Most of the topics included

were based on MDT's CHSP's (Montana Department of Transportation (MDT), 2020) emphasis areas which included impaired driving, unrestrained vehicle occupants, roadway departure and intersection crashes, and emergency response–after-crash care. The storyboards were a compilation of existing safety videos, infographics (i.e., “What Will a DUI Cost You?” as identified in the CHSP), and trivia slides. Only videos where permission was granted for use were incorporated. MDT chose two of the storyboards which were then edited into video sequences that could play as a continuous loop. To be less intrusive to staff and customers, audio was removed from the videos and replaced with open captions. However, as described in Jabbour (Jabbour, 2012), based on the theory of cognitive learning, this approach is only able to engage the visual channel.

The first video sequence introduced the concept of vision zero; focused on MDT's CHSP emphasis areas of emergency response–after-crash care; roadway departure and intersection-related crashes; impaired driving; provided information on various modes including bicyclists and motorcycles; provided information on how to traverse a roundabout; and featured snowplow safety. The first video sequence was shown from July 2021 to April 2022.

The second video sequence also provided a reference to zero deaths; focused on MDT's CHSP emphasis areas of unrestrained vehicle occupants and roadway departure and intersection-related crashes; provided information on various modes including rail and slow-moving vehicles; discussed rural behaviors of distracted driving and speeding; and featured flashing yellow lights at traffic signals and work zone safety. Both video sequences featured a Real ID video, reflecting the cooperation between the Montana Department of Justice (DOJ) and MDT to enable this project to move forward. A stated goal of MDT's CHSP (Montana Department of Transportation (MDT), 2020) was to collaborate across agencies; this effort reflects successful collaboration. Both video sequences also contained trivia questions and infographics. The second was shown from April 2022 to August 2022. (To read more about the locations and equipment, see Task 2 and 3 Reports).

During each deployment period of the video sequences, researchers conducted on-site intercept surveys. The intercept survey was pilot tested in July 2021 to address any needed changes. The format of the intercept surveys was consistent across the two deployment periods; however, some content (i.e., the screen captures and slogans) was changed to reflect the specific video sequence shown during the deployment period. Patrons eighteen years of age and older leaving a facility during the surveying period were asked to complete an intercept survey. Candy was offered as an incentive to participate.

A total of six blocks of time (three in the morning, three in the afternoon) across a variety of days throughout each data collection period were targeted for each location. Two data collection periods were completed for each video sequence. Therefore, a total of twenty-four blocks of time to collect surveys were set as the goal for each location. Montana DOJ staff had noted that the offices can be busier towards the end of the month when people try to get in before their documents expire. Consequently, the researchers tried to collect some of the data towards the end of the month, although this may present a potential bias.

Approximately two weeks after completing an intercept survey, any respondents who indicated they had both seen the TV and agreed to be contacted for a follow-up survey were either emailed or mailed a follow-up survey. The follow-up survey was tailored to the month in which, and the location where, a survey respondent completed an intercept survey. The time was taken to personalize the participation request in this manner, as the researchers have found such an approach to encourage a response. Those willing to participate in a follow-up survey online were sent an individual email from the researcher with a link tailored to their email address. Those

willing to participate in a follow-up survey via mail were sent a hard copy survey along with a self-addressed, stamped envelope. In addition to the original invite, survey respondents (both online and via mail) were sent a reminder (one week later for online respondents and two weeks later for mail respondents). The researchers were able to link intercept and follow-up survey responses. All surveys were submitted to and received approval through Montana State University's Internal Review Board Protocol, #NV-W070221-EX.

3.1 COVID-19 Impacts

The intercept survey data collection was delayed twice due to surges in the number of COVID-19 infections. To address health and safety concerns associated with COVID-19, disinfectant wipes were used to clean pens and clipboards after each use, masks were worn by surveyors per local directives, and hand sanitizer was provided. In some cases, COVID-19 surges may have impacted a potential participant's interest in taking part in surveying. Some locations had reduced seating or rearranged waiting areas to accommodate social distancing or implemented "wait in your vehicle" policies during longer wait times. This reduced participants' potential video viewing time. Additional impacts because of COVID-19 will be discussed in the results.

3.2 Pilot Surveying

There were concerns regarding whether or not the anticipated numbers of customers at MVD/CTOs may be less (when compared with data from 2019), both with COVID-19 and many MVD offices and CTOs requiring appointments. Therefore, to better understand the number of potential surveys that could be collected, a pilot of the survey was conducted in July of 2021 at the Bozeman MVD and Helena CTO. In addition, this pilot also allowed for further refinement of the intercept survey instrument. For a half day of data collection at both the Bozeman MVD and Helena CTO, respectively, six and sixteen intercept surveys were collected. This is a significant reduction for Bozeman MVD from the pre-COVID-19 pandemic estimates of thirty intercept surveys.



The ongoing COVID-19 pandemic and the survey pilot resulted in several changes to the survey data collection approach that was originally proposed. Data collection was reduced to four-hour days to reduce survey administrator fatigue. To accommodate this change, the survey collection period changed from two, eight-hour days at each location per data collection period to six, four-hour days. This change resulted in an increase of total hours per location during each data collection period from sixteen hours to twenty-four hours. In addition to reducing survey fatigue, this change allowed for more data collection time to accommodate potentially low response rates (as seen in the pilot testing). In addition, research team members were identified in closer proximity to the survey locations. This reduced the need for long distance travel during a time period when COVID-19 travel restrictions were continually changing. It also allowed for data to be collected at the Kalispell MVD, which was originally not considered as a location.

4 Intercept Surveys

This section details the intercept surveys collected and findings from the analysis of this data.

4.1 First Video Sequence

The first video sequence was shown from July 2021 to April 2022. Topics covered included encouraging Montanans to buckle up; bicycle safety; motorcycle safety; emergency responder safety; roundabout safety and how to properly drive through a roundabout; Real ID; obtaining a sober driver; the costs of driving under the influence; and operating safely around snowplows. The video topics reflect the following initiatives identified in the CHSP: sober transportation, practicing safe driving behaviors, and buckling up. APPENDIX A: Intercept Surveys provides more details about the various videos, infographics, transition images, and trivia that constituted the first video sequence. It also shows the days, times, and survey locations for the first and second data collection periods (August/September 2021 and October/November 2021) for the first video sequence and the capture rate (i.e., the percentage of people that were asked to take the intercept survey that accepted). Figure 2 presents the intercept survey developed for the first video sequence.

Date: _____

The Western Transportation Institute at Montana State University (MSU) is working with the Montana Department of Transportation to improve safety for Montanans. Participation is voluntary. You may skip any question you want, and you may stop at any time. We anticipate that the survey will take about 5 minutes to complete. Please direct any questions about the survey to Natalie Villwock-Witte: n.villwockwitte@montana.edu or 505-414-8935.

What is your 5- digit zip code? _____

What is your age? _____

What is your gender? ☐ Male ☐ Female ☐ Non-Binary

Did you look at the **TV monitor** during your visit? ☐ Yes ☐ No

↓


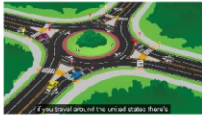


If you did **not** watch the TV monitor during your visit, how did you spend your wait time?

☐ Filling out forms ☐ On a phone/smartphone ☐ Other (please specify): _____

Which of the following best describes the amount of **time** you spent at the **Motor Vehicle Division (MVD)/County Treasurers' Office**?

☐ Less than 15 min. ☐ 15 to 30 min. ☐ 31 to 45 min. ☐ 46 to 60 min. ☐ More than 60 min

Please **circle all** of the following that you **saw today** viewing the videos in the **MVD/County Treasurers' Office**?

Please share anything particularly **memorable** that you may recall from the **videos** in the **MVD/Treasurers' Office**.

Which of the following slogans or phrases (check all that apply) did you **learn** from **viewing the videos** in the **MVD/Treasurers' Office**?

☐ Slow down and move over. ☐ What's your one reason? ☐ Slow down, look around, be ready to yield.

☐ Never Drink and Drive ☐ Don't Crowd the Plow

Including yourself, how many **adults** _____ and **children (under 18)** _____ live in your household?

Would you be willing to complete a **short follow-up** survey in two weeks? ☐ Yes ☐ No

The information that you provide will be solely used for research purposes. Personal information about respondents will remain strictly confidential and will not be sold or shared per MSU's IRB.

If yes, please either provide us with your email address (survey will be sent via email) or mailing address:

Email Address: _____

or

Mailing Address

Name: _____

Address: _____

City, State, Zip: _____

Figure 2: First video sequence intercept survey instrument.

The intercept surveys were kept to a page to reduce the burden to survey respondents (Dillman, Smyth, & Christian, 2014).

4.2 Second Video Sequence

The second video sequence was shown from April 2022 to August 2022. Topics included buckling one's seat belt, rumble strips, railroad crossing safety, slow vehicles, reducing speed when entering a horizontal curve, the impacts of texting on situational awareness, the flashing yellow arrow

treatment at traffic signals, Real ID, and speeding. The video topics reflect the following initiatives identified in the CHSP: practicing safe driving behaviors and buckling up. APPENDIX A: Intercept Surveys provides more details about the various videos, infographics, transition images, and trivia that constituted the second video sequence. It also shows the days, times, and survey location for the first and second data collection periods (April/May 2022 and June/July 2022) for the second video sequence and the capture rate (i.e., the percentage of people that were asked to take the intercept survey that accepted). Figure 3 presents the intercept survey developed for the second video sequence. Notice the consistency in format of the intercept surveys used for both video sequences, with only the screen captures and slogans changing.



Date: _____

The Western Transportation Institute at Montana State University (MSU) is working with the Montana Department of Transportation to improve safety for Montanans. Participation is voluntary. You may skip any question you want, and you may stop at any time. We anticipate that the survey will take about 5 minutes to complete. Please direct any questions about the survey to Natalie Villwock-Witte: n.villwockwitte@montana.edu or 505-414-8935.

What is your 5- digit **zip code**? _____What is your **age**? _____What is your **gender**? ☐ Male ☐ Female ☐ Non-BinaryDid you look at the **TV monitor** during your visit? ☐ Yes ☐ NoIf you did **not** watch the TV monitor during your visit, how did you spend your wait time?☐ Filling out forms ☐ On a phone/smartphone ☐ Other (please specify): _____Which of the following best describes the amount of **time** you spent at the **Motor Vehicle Division (MVD)/County Treasurers' Office**?☐ Less than 15 min. ☐ 15 to 30 min. ☐ 31 to 45 min. ☐ 46 to 60 min. ☐ More than 60 minPlease **circle all** of the following that you **saw today** viewing the videos in the **MVD/County Treasurers' Office**?Please share anything particularly **memorable** that you may recall from the **videos** in the **MVD/Treasurers' Office**.Which of the following slogans or phrases (check all that apply) did you **learn** from **viewing the videos** in the **MVD/Treasurers' Office**?
☐ Check for trains ☐ The right seat ☐ Stop speeding before it stops you
☐ SAM I AM ☐ Slow down for the curve
Including yourself, how many **adults** _____ and **children (under 18)** _____ live in your household?Would you be willing to complete a **short follow-up** survey in two weeks? ☐ Yes ☐ No

The information that you provide will be solely used for research purposes. Personal information about respondents will remain strictly confidential and will not be sold or shared per MSU's IRB.

If yes, please either provide us with your email address (survey will be sent via email) or mailing address:

Email Address: _____

or

Mailing Address

Name: _____

Address: _____

City, State, Zip: _____

Figure 3: Second video sequence intercept survey instrument.

4.3 Intercept Survey Data

This section discusses the intercept survey data collected. First, a summary of the total number of surveys collected by video sequence, by data collection period, and by location are identified. Next, the number of survey respondents who reported seeing the video sequences on the TVs are identified; if they did not see the video sequences, a summary of what they reported doing during their wait time is discussed. Then after, zip codes reported by intercept survey respondents will be analyzed. Finally, demographics, including age, gender, and number of adults and children reported in households will be described.

4.3.1 Number of Collected Surveys

Table 1 summarizes the number of intercept survey data collected during both video sequences.

Table 1: Intercept surveys collected by location and video sequence.

	Data Collection Period	Billings MVD	Bozeman MVD	Bozeman CTO	Helena CTO	Kalispell MVD	TOTAL
First Video Sequence	Aug/Sept 2021	93	113	126	57	92	481
	Oct/Nov 2021	76	146	80	54	100	456
	Subtotal	169	259	206	111	192	937
Second Video Sequence	April/May 2022	72	79	63	61	93	368
	June/July 2022	62	64	68	74	59	327
	Subtotal	134	143	131	135	152	695
TOTAL		303	402	337	246	344	1,632

Overall, the second video sequence resulted in the fewest number of intercept surveys collected, with the June/July 2022 data capture having the lowest. The biggest change was seen for the Kalispell MVD. Three explanations have been suggested that may explain the lower intercept survey counts during the second video sequence: flooding, seasonal differences, and normalizing post-COVID-19. The area experienced significant flooding within this time frame, including road closures in some areas, which may have impacted a potential customer's interest in accessing the services at the facility or even their ability to physically get to the facility. In addition, the lower intercept survey data collected could also represent seasonal differences in people accessing the facilities. The reduction in the number of intercept surveys collected could also reflect those needing to access the services at the facilities post-COVID-19 in 2021, where the facilities had reduced hours and were closed previously, with more normal numbers occurring in 2022.

4.3.2 Reported Conspicuity of TV Monitor

For both video sequences, the same question, “Did you look at the TV monitor during your visit?” was asked. A total of 238 intercept survey respondents (25.4%) reported seeing the TV during the first video sequence with an increase both by numbers and percent for the second video sequence: 280 intercept survey respondents (40.3%) (Table 2).

Table 2: Reported conspicuity of television monitor by location, video sequence, and data collection period.

	Data Collection Period	Billings MVD	Bozeman MVD	Bozeman CTO	Helena CTO	Kalispell MVD	TOTAL
First Video Sequence	Aug/Sept 2021	7 (7.5%)	23 (18.3%)	38 (30.2%)	21 (36.8%)	21 (22.8%)	110 (22.9%)
	Oct/Nov 2021	9 (11.8%)	42 (28.8%)	29 (36.3%)	19 (35.2%)	29 (29.0%)	128 (28.1%)
	Subtotal	16 (9.5%)	65 (25.1%)	67 (32.5%)	40 (36.0%)	50 (26.0%)	238 (25.4%)
Second Video Sequence	April/May 2022	49 (34.3%)	16 (11.2%)	29 (20.3%)	27 (18.9%)	22 (15.4%)	143 (38.9%)
	June/July 2022	44 (32.1%)	14 (10.2%)	37 (27.0%)	28 (20.4%)	14 (10.2%)	137 (41.9%)
	Subtotal	93 (33.2%)	30 (10.7%)	66 (23.6%)	55 (19.6%)	36 (12.9%)	280 (40.3%)
TOTAL		109 (21.0%)	95 (18.3%)	133 (25.7%)	95 (18.3%)	86 (16.6%)	518 (31.7%)

Overall, it was estimated that many more customers would see the TVs, as suggested by Silva et al. (Silva, Laiz, & Tabak, 2020) because videos tend to capture one’s attention. The lack of visibility was particularly acute for the Billings MVD location during the first video sequence. During the August/September 2021 data collection, the researchers observed that the data suggested many survey respondents did not view the TV. As a result of the modification to the waiting area and seating area in response to COVID-19, the location for the TV was no longer conspicuous for many customers. Chairs were rearranged to facilitate social distancing, and plastic partitions were installed between desks. In addition, while survey collections were delayed due to COVID-19, one location was remodeled which altered the planned location of the TV. The researchers brainstormed opportunities to bring visibility to the TVs that would not require assistance from on-site staff. One idea was to add links to the videos on the website where appointments were made. A suggestion that was enacted was to hang posters with a QR code that would direct users to the location of the video online (Figure 4).



Figure 4: Poster with QR code.

One benefit of the posters is that several could be hung within facilities at a relatively low cost or at other relevant locations without having to purchase equipment (i.e., the TV). In addition, the video accessed using this method included audio, therefore, as discussed by Jabbour (Jabbour, 2012), one's auditory channel could be engaged. A drawback of the posters is that a user had to take the extra step of scanning the QR code, which potentially limited the effectiveness. The location and visibility of the poster influenced the number of times a poster was scanned. For example, the poster located in the entrance lobby at the Bozeman MVD was highly visible. Yet, this location was found to be ineffective based on the limited number of scans (Table 3). The researchers concluded that it was not convenient for a patron to stop and scan the poster.

Table 3: Posters: Hang Date and Number of Times Accessed.

Posters	Billings MVD	Bozeman MVD	Bozeman CTO	Kalispell MVD	Helena CTO	Total
Date poster was hung	October 29, 2021	October 22, 2021	November 28, 2021	November 24, 2021*	November 3, 2021	-
Scans, October 22, 2021 through April 9, 2022	47	3	17	9	31	107
Scans, April 10, 2022 through September 10, 2022	23	2	11	31	38	105
Total number of times QR code was scanned	70	5	28	40	69	212

*The poster was delivered on October 26, 2021; however, the first scan was not until November 24, 2021. Therefore, it is unclear regarding when the poster was hung.

Between October 22, 2021 and April 9, 2022, (approximately 114 business days), the QR code for the first video sequence was scanned 107 times, on average 0.94 times/day. Once the code was scanned however, the online video was only actually viewed 12 times (not necessarily in its entirety). Between April 10, 2022 and September 9, 2022, (approximately 108 business days), the QR code for the second video sequence was scanned 105 times, on average 0.97 times/day. During that time, the online video was viewed 59 times. Table 4 provides an overview of the QR code scans and video views per sequence.

Table 4: Comparison of QR Code Scans and Video Views per Sequence.

	QR Code for 1 st Video Sequence	QR Code for 2 nd Video Sequence
Poster Displayed	October 22, 2021 - April 9, 2022	April 10, 2022 to September 9, 2022
Days Available for Scanning (no weekends/holidays)	114	108
Total Scans Per Sequence	107	105
Average QR Scans Per Day	0.94	0.97
Total Video Views	12	59

The significant increase in video viewing for the second sequence is likely due to the removal of a landing page that required an additional click by the user for the video to play after the QR code was scanned. The process was adjusted by removing the landing page so that the video played as soon as the QR code was scanned. The average view time across both video sequences was one minute and twenty seconds. This averages out to only approximately 21% of the video viewed once accessed. Based on the limited number of times the posters were used to access the video, the researchers concluded that the posters with QR codes were not an effective tool to bring conspicuity to the traffic safety messages conveyed through the video sequences.

After noting that the posters were not as effective as hoped, the Montana DOJ coordinated with the researchers in an effort to find a better location for the TVs. The following sections discuss challenges of TV placement at each location.

Billings MVD

One of the most notable changes made in the study was at the Billings MVD location, where the TV was relocated to a different area (Figure 5).



Figure 5: Location of television monitor within Billings MVD during the first (left) and second (right) video sequence.

During the first video sequence, the TV was located *behind* where patrons may be seated. Prior to deploying the second video sequence, the TV was re-located behind the staffing desk. Thus, the customer was facing the TV while data was being entered by staff (Figure 5 and Figure 6).

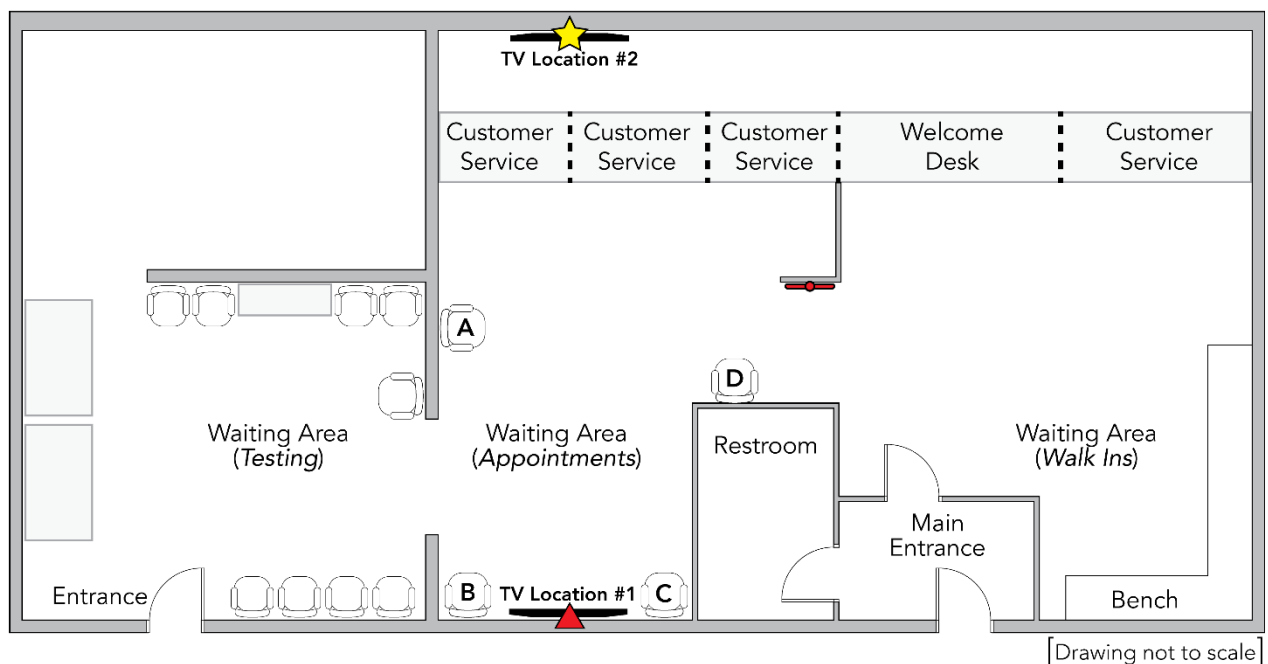


Figure 6: Plan view of Billings MVD, with first and second TV location.

Bozeman MVD

The TV at the Bozeman MVD location had a few chairs in proximity to it, but some seats next to the entry doors could not view the TV (Figure 7). In addition, the distance from the TV to the main waiting area could make reading the slogans and trivia slides difficult. It could also make reading the sub-text of the video sequences difficult. With no audio provided, the ability to convey the information from the videos to customers would be limited.



Figure 7: Location of television monitor within Bozeman MVD.

The following layout shows the TV location in relationship to the seating (Figure 8). Note that although there are two doors built into the entrance, the left one is locked and blocked from both sides so that it cannot be used. Consequently, most patrons came in and sat in the chairs just to the right of the entrance. Therefore, the TV was not always viewed by many customers.

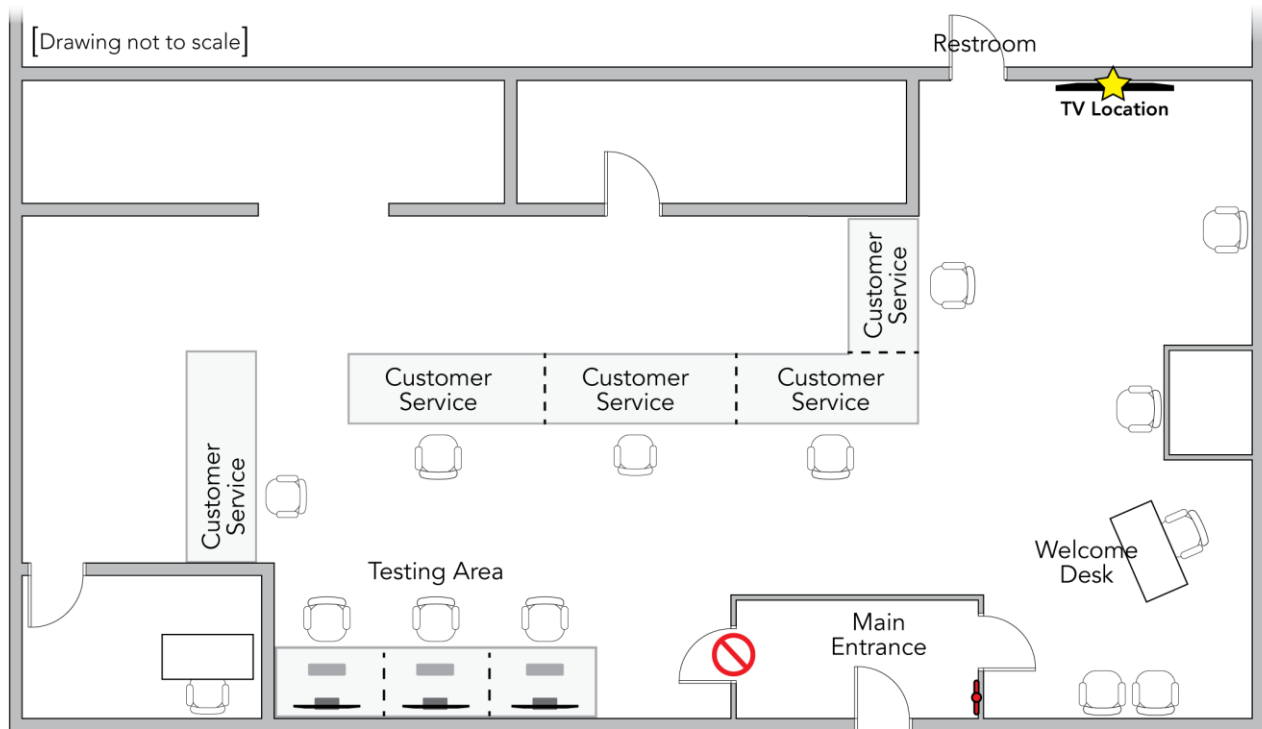


Figure 8: Plan view of Bozeman MVD showing TV and poster location.

Bozeman CTO

The Bozeman CTO TV was reported by about a third of patrons as being visible. The location of the TV in relationship to the seating was viewable by the majority of the waiting room chairs (Figure 9 and Figure 10).



Figure 9: Location of television monitor within the Bozeman CTO.

However, a challenge with this location is that patrons could track their place in line via the website. Thus, they did not necessarily have to wait in the seating area.

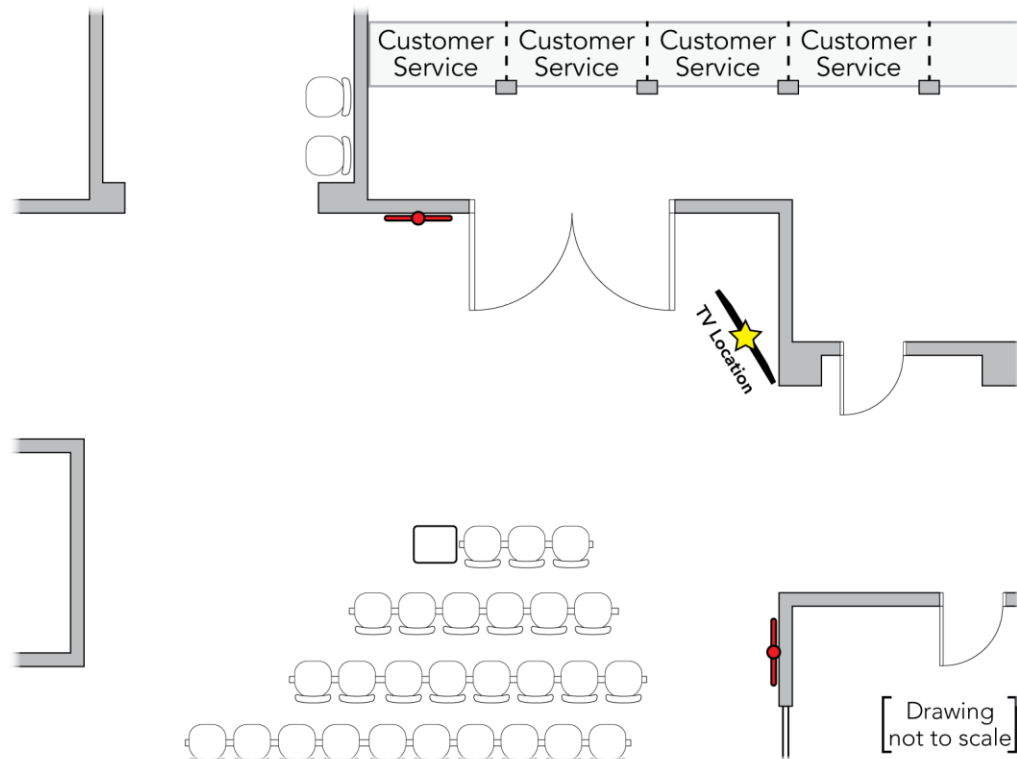


Figure 10: Plan view of Bozeman CTO showing TV and poster locations.

Helena CTO

For the Helena CTO location, the placement of the TV was not necessarily the challenge. Rather, the fact that the content of the TV for the research project (left TV in Figure 11 and Figure 12) was competing with the content provided by the City of Helena's TV (right TV in Figure 11 and Figure 12) presented a challenge.

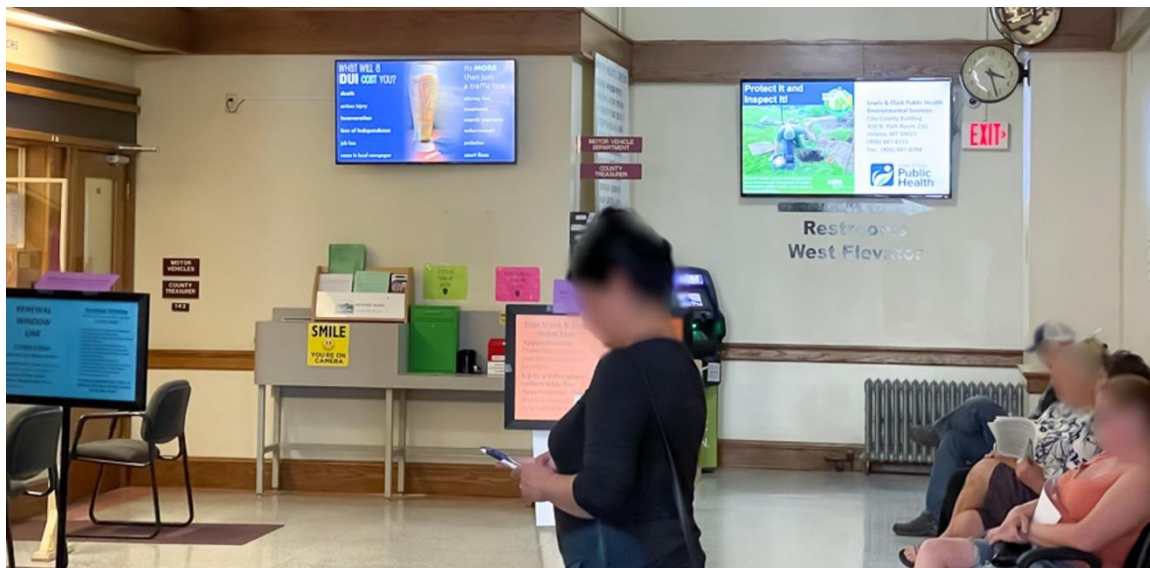


Figure 11: TVs with competing information at the Helena CTO.

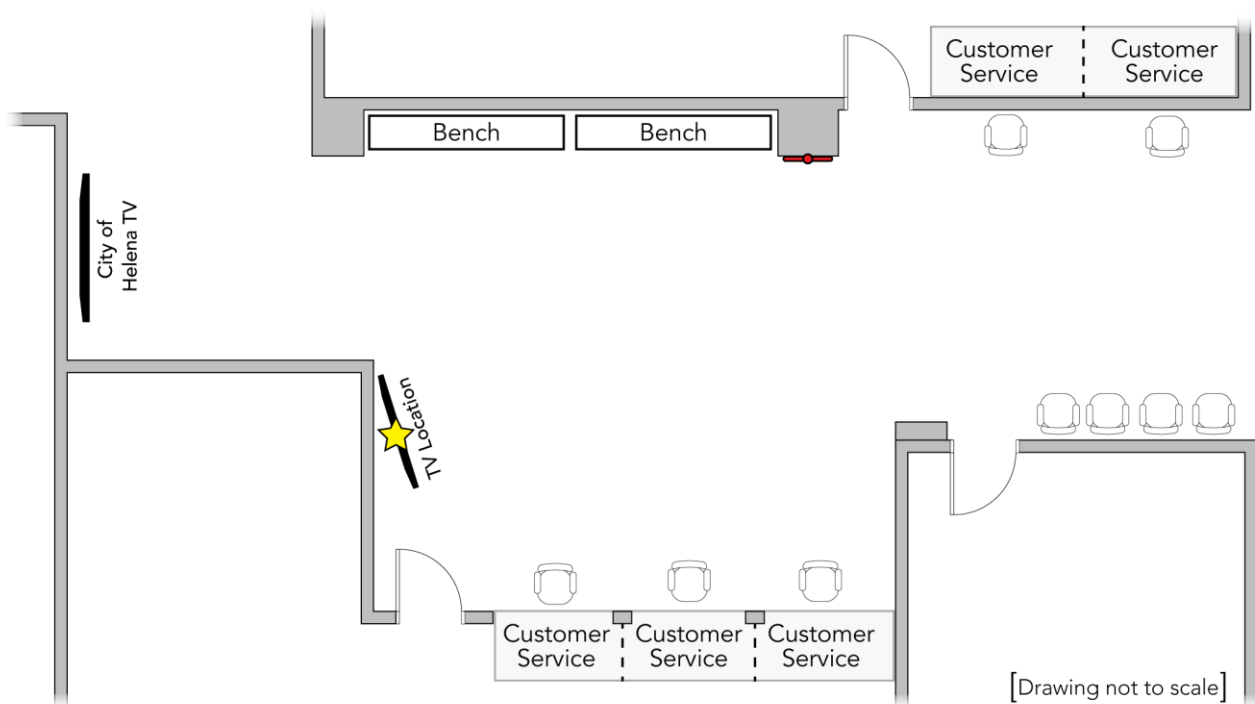


Figure 12: Plan view of Helena CTO showing the locations of the TVs and poster.

A request had been made to display the content for the project on both TVs when surveyors were on-site. Unfortunately, the researchers were unable to identify the appropriate manager; therefore, the two monitors displayed different content.

Kalispell MVD

For the Kalispell MVD, two of the four waiting room seats were unable to see the TV because the TV was set relatively far back behind the welcome desk (see bottom hatching in Figure 13). In addition, another divider further impeded individuals sitting in additional seats from viewing the TV. The researchers had proposed relocating the TV along the wall where patrons entered. Unfortunately, due to lack of an electrical outlet on the proposed wall, the TV was not moved.

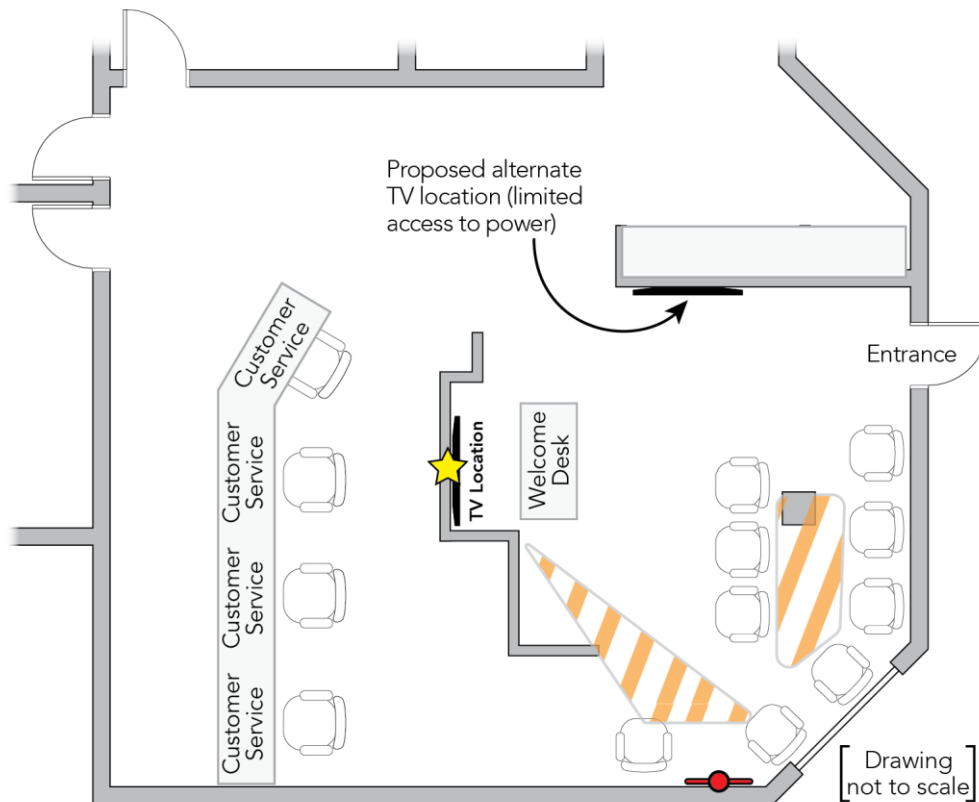


Figure 13: Plan view of Kalispell MVD showing the locations of the TV, proposed TV, and poster.

Summary

Results from this data suggest that the location of the TV significantly influences whether or not the content is viewed. However, as experienced during this project, there is a need to continually review the location of the TV, as there may be changes to the facility and locations of the chairs over time. Office remodels, chair re-arrangements, power limitations, no requirement to wait onsite, lack of audio, and walls or other visual obstructions were all challenges of ensuring that the TV was seen and the content viewed.

4.3.3 How did intercept survey respondents spend their time if they did not see the TVs?

To better understand why intercept survey respondents may not be watching the videos on the TVs, intercept survey respondents were asked how they passed their time. Respondents were provided with three options: filling out forms, using one's phone, and other.

For the first video sequence, during the August/September 2021 data collection period, the majority of intercept survey respondents (146 or 30.4%) reported filling out forms, followed by making use of their smartphone (133 or 27.7%). Ninety-one intercept survey respondents reported other. Activities ranged from people watching, to talking with staff, to reading a book, to thinking and waiting. A similar pattern was observed during the October/November 2021 data collection period where the majority of intercept survey respondents reported filling out forms (150 or 33%), followed by making use of their smartphone (110 or 24%). Eighty-three survey respondents reported other. Reported activities include reading, waiting, people watching, reading a manual,

sitting still, and looking around.

For the second video sequence, during the April/May 2022 data collection period, the majority of intercept survey respondents (101 or 27%) reported filling out forms, followed by making use of their smartphone (81 or 22%). Fifty-six reported other. People reported talking to their spouse, visiting with their daughter, standing, sitting, reading (a magazine), watching people, and visiting as other ways that they occupied their time. The June/July 2022 data collection period was different than the other three data collection periods in that the majority of survey respondents reported making use of their smartphones (98 or 30%) as compared with the next most popular response which was filling out forms (88 or 27%). Forty-seven survey respondents reported other. People reported watching people, talking (with wife), visiting, walking their dog, reading, eavesdropping, daydreaming, watching their baby, working on their computer.

Overall, the majority of feedback given by those waiting was similar.

During busy periods, the Billings MVD would ask patrons to wait in their vehicle (if available) until they were called into the building by the receptionist (if they were waiting for a walk-in appointment) or until closer to their appointment time (if they had a pre-scheduled appointment) in order to reduce the number of people waiting in the building. Both Bozeman locations allowed patrons to wait outside or in their vehicles.

4.3.4 Location of Residence as Identified by Zip Codes

Intercept survey respondents were asked to provide their zip codes to better understand the origins of customers of each facility which helps to explain how far the information is disseminated.

Figure 14 through Figure 16 show the zip codes provided by survey respondents during the first data collection period (August/September 2021), the second data collection period (October/November 2021), and for all intercept surveys collected during the first video sequence, respectively (Note: Not all survey respondents provided their zip codes). Maps showing the counts by data collected, by data collection period, and by location for the first video sequence can be found in APPENDIX A: Intercept Surveys.

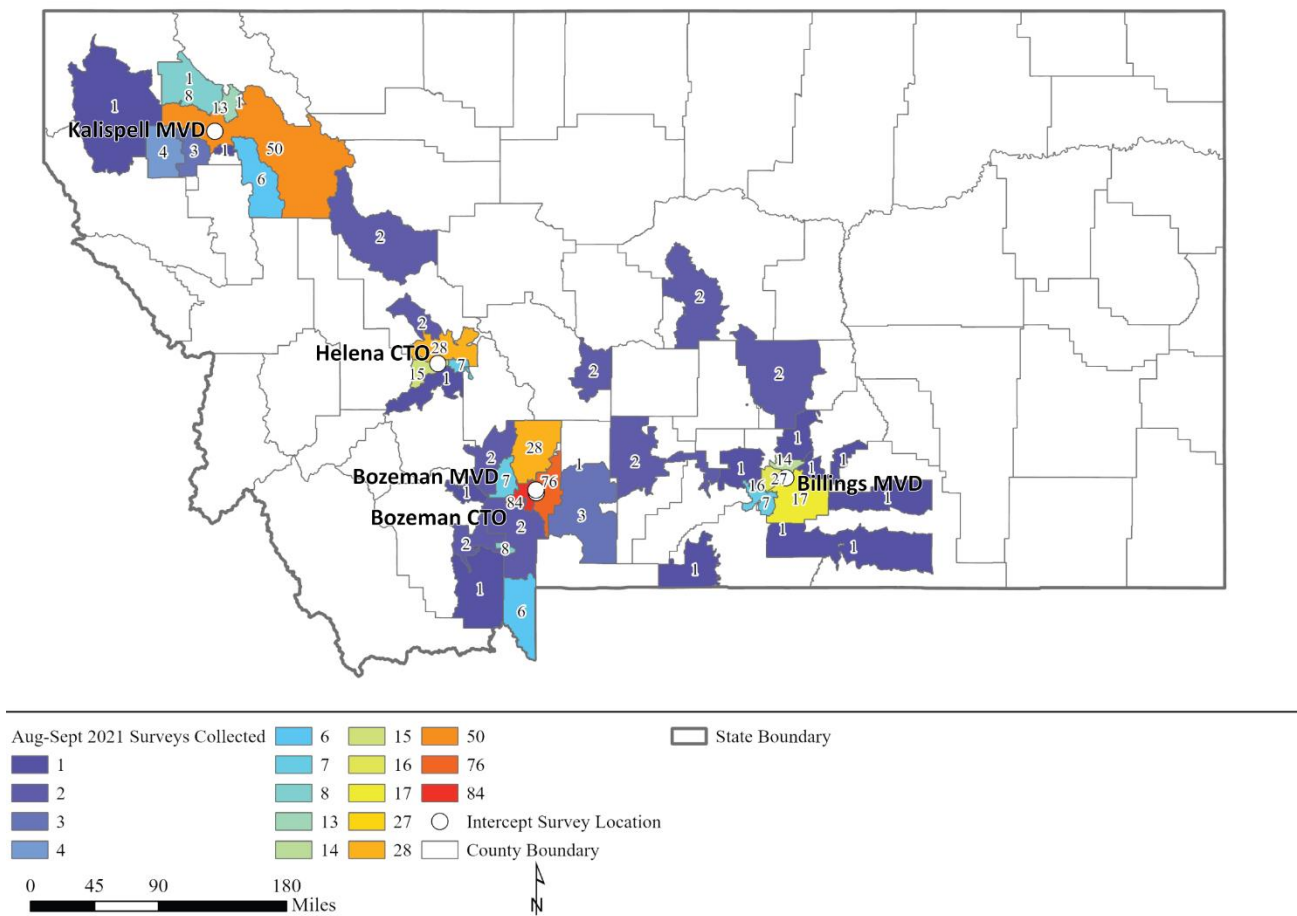


Figure 14: Zip codes of intercept surveys, first data collection period (August/September 2021), first video sequence.

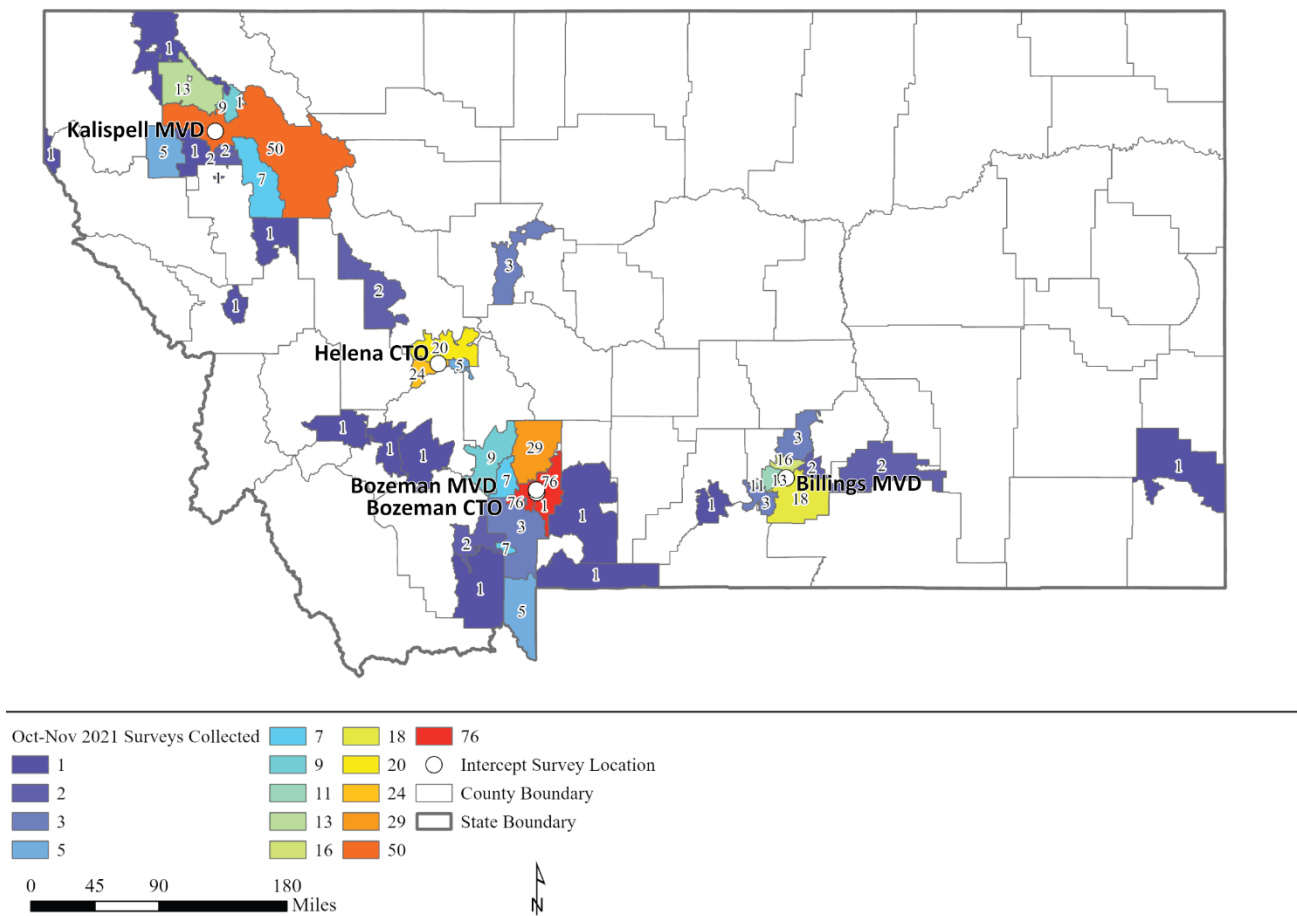


Figure 15: Zip codes of intercept surveys, second data collection period (October/November 2021), first video sequence.

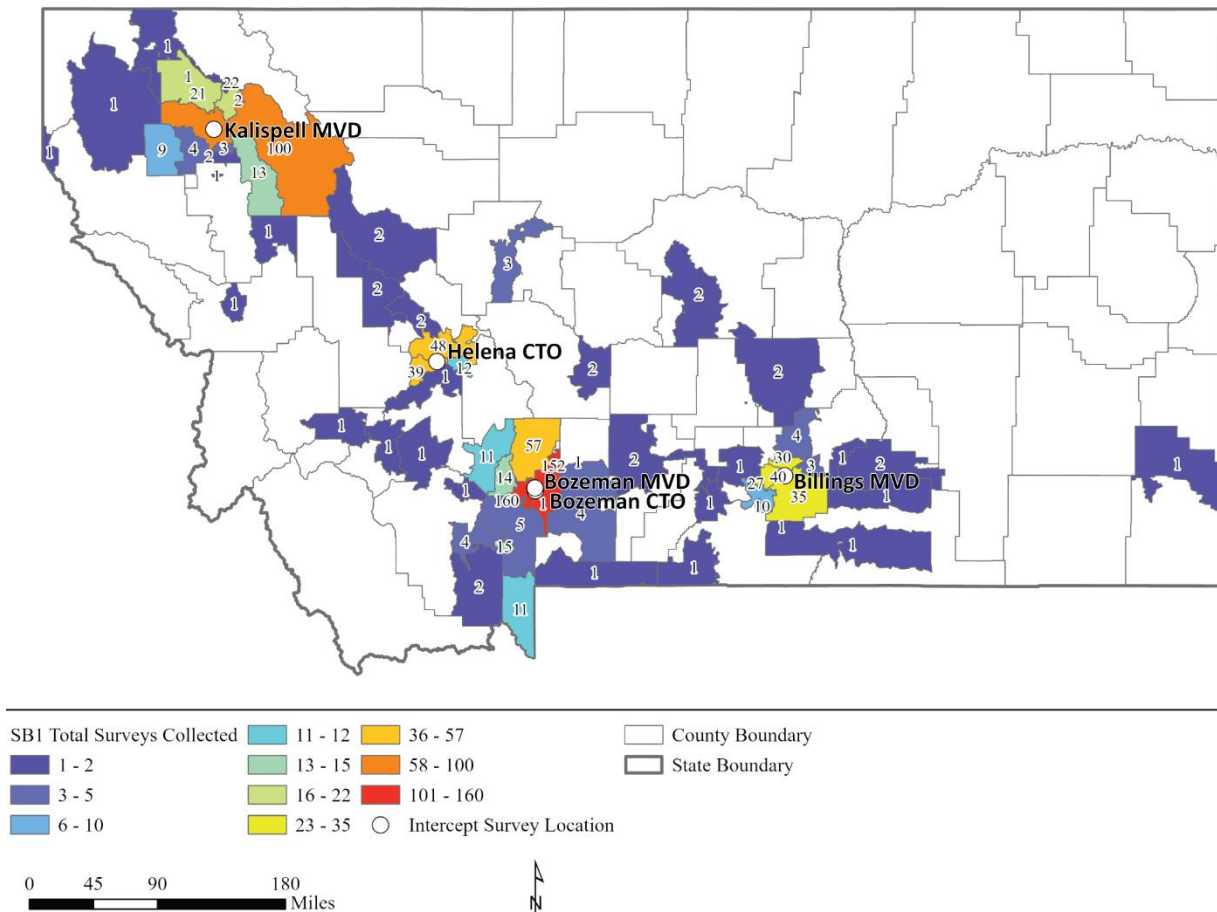


Figure 16: All zip codes of intercept surveys from both data collection periods during the first video sequence.

Figure 17 through Figure 19 show the zip codes provided by survey respondents during the first data collection period (April/May 2022), the second data collection period (June/July 2022), and for all intercept surveys collected during the second video sequence, respectively. (Note: Not all survey respondents provided their zip codes). Maps showing the counts by data collected, by data collection period, and by location for the second video sequence can be found in APPENDIX A: Intercept Surveys.

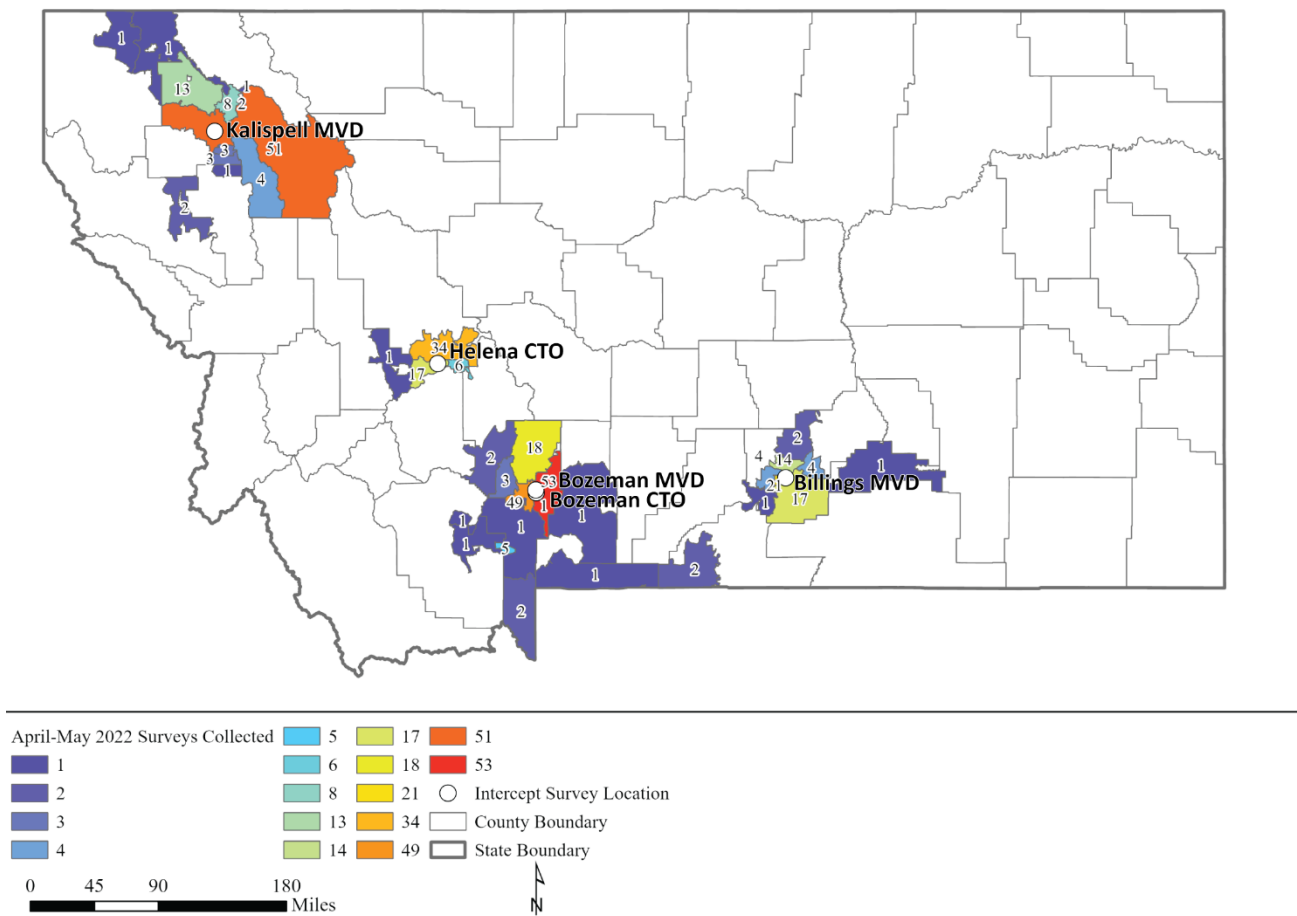


Figure 17: Zip codes of intercept surveys, first data collection period (April/May 2022), second video sequence.

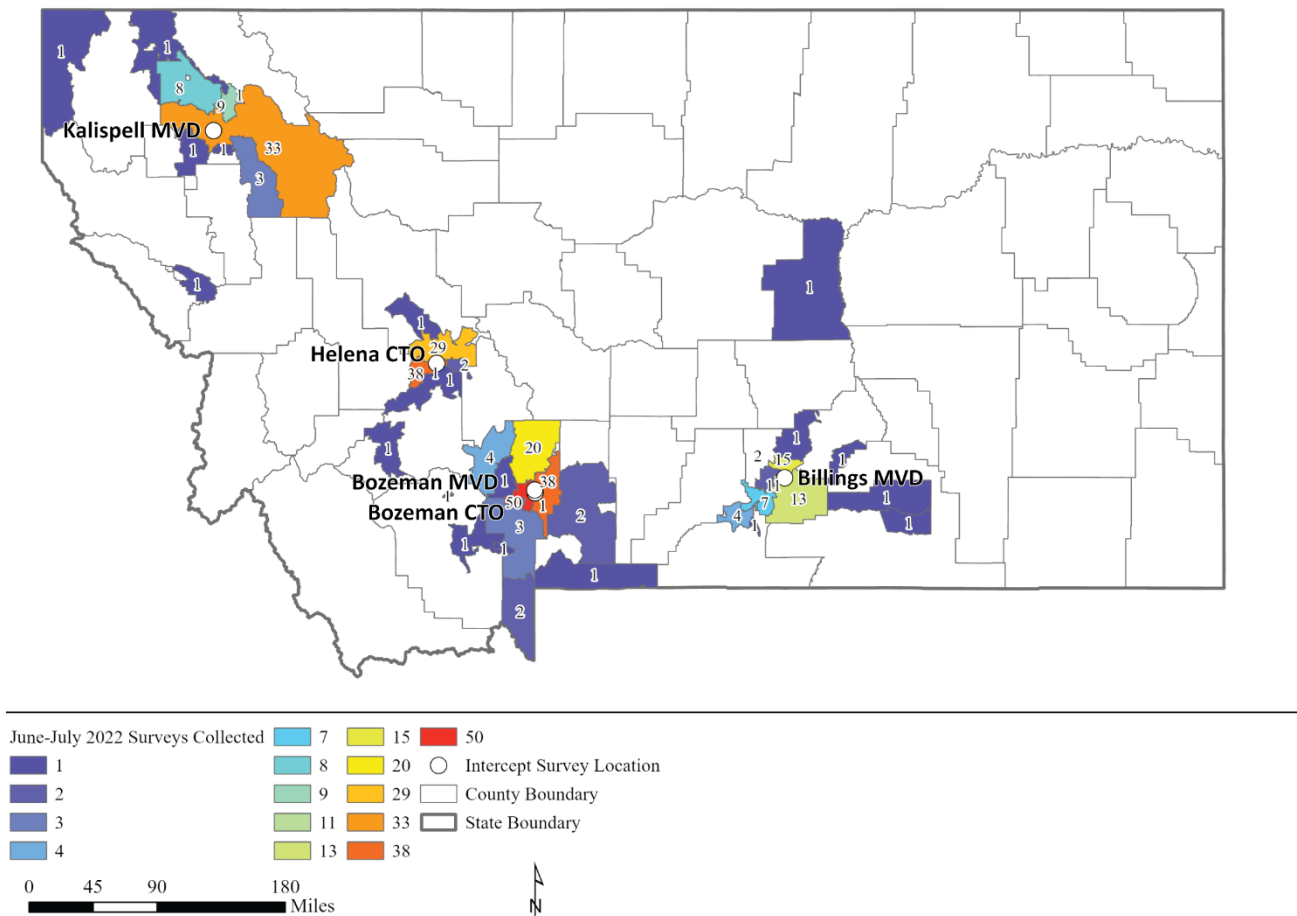


Figure 18: Zip codes of intercept surveys, second data collection period (June/July 2022), second video sequence.

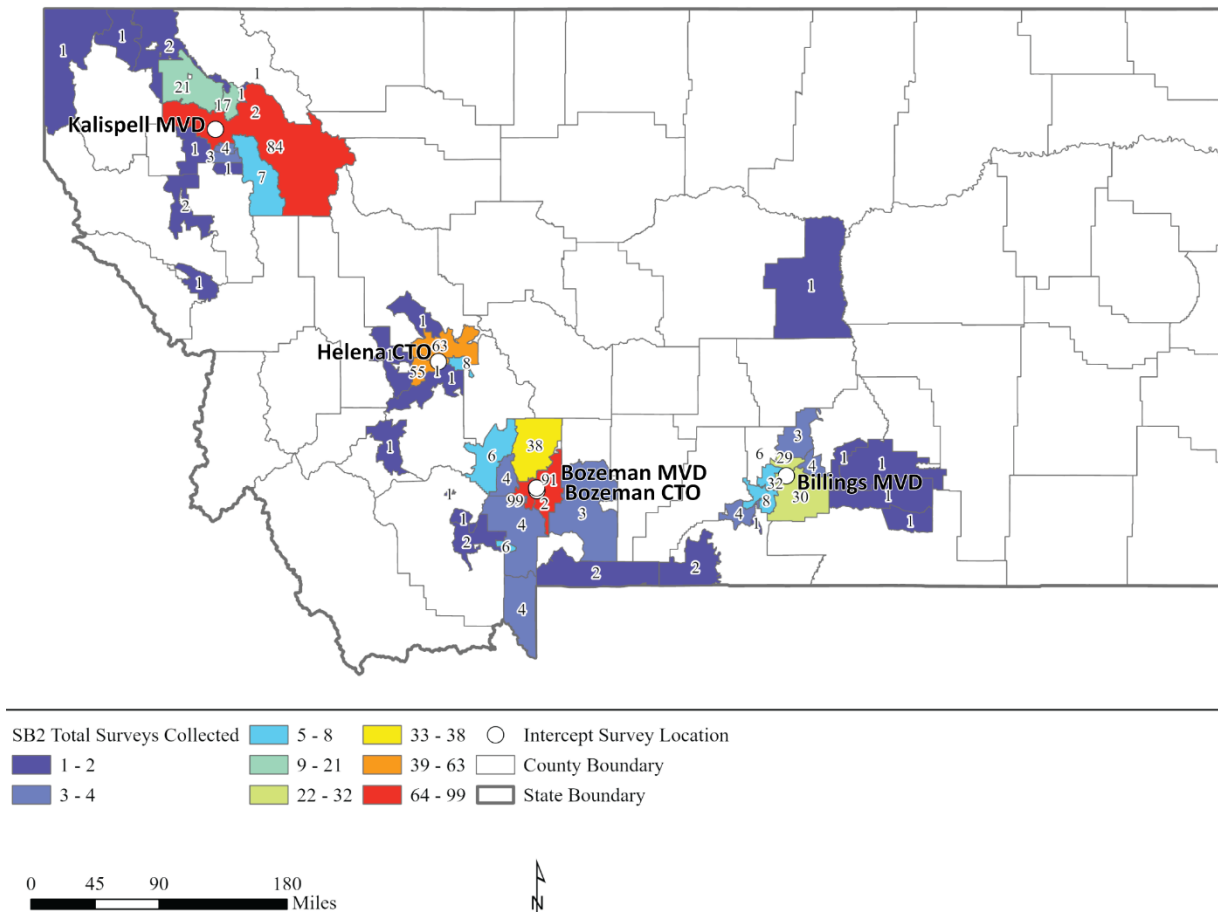


Figure 19: All zip codes of intercept surveys from both data collection periods during the second video sequence.

Compared with the first video sequence, the second video sequence respondents reported zip codes that are more clustered around each facility. One possible explanation is that during the first video sequence, with people having been restricted from accessing services at facilities during COVID-19, more people were willing to access services from further away MVD/CTO locations that may have had more appointment availability. By the second video sequence, this queued up demand had been addressed. As noted in the earlier discussion, the number of intercept surveys was fewer during the second video sequence when compared with the first video sequence. The areas that are further away from the data collection locations are more rural parts of Montana. Consequently, it does suggest that maybe these more rural Montanans were able to access the services that they needed during the first video sequence, and consequently, there were fewer people accessing the services from these more remote, less populous, counties during the second video sequence.

4.3.5 Reported Wait Time

There is the potential that the amount of time spent at a facility can influence if a customer was able to watch or how well they could absorb the information that was presented. Consequently, to enable an analysis of this impact, intercept survey respondents were asked to report their wait times. However, how an intercept survey respondent interpreted this question may vary, as some may have also included how long it took them to address their business. Figure 20 shows the percentage of intercept survey respondents reporting each category of wait duration. APPENDIX A: Intercept Surveys presents the number of intercept survey respondents and percentage reporting

the amount of wait time that were present at each facility by video sequence.

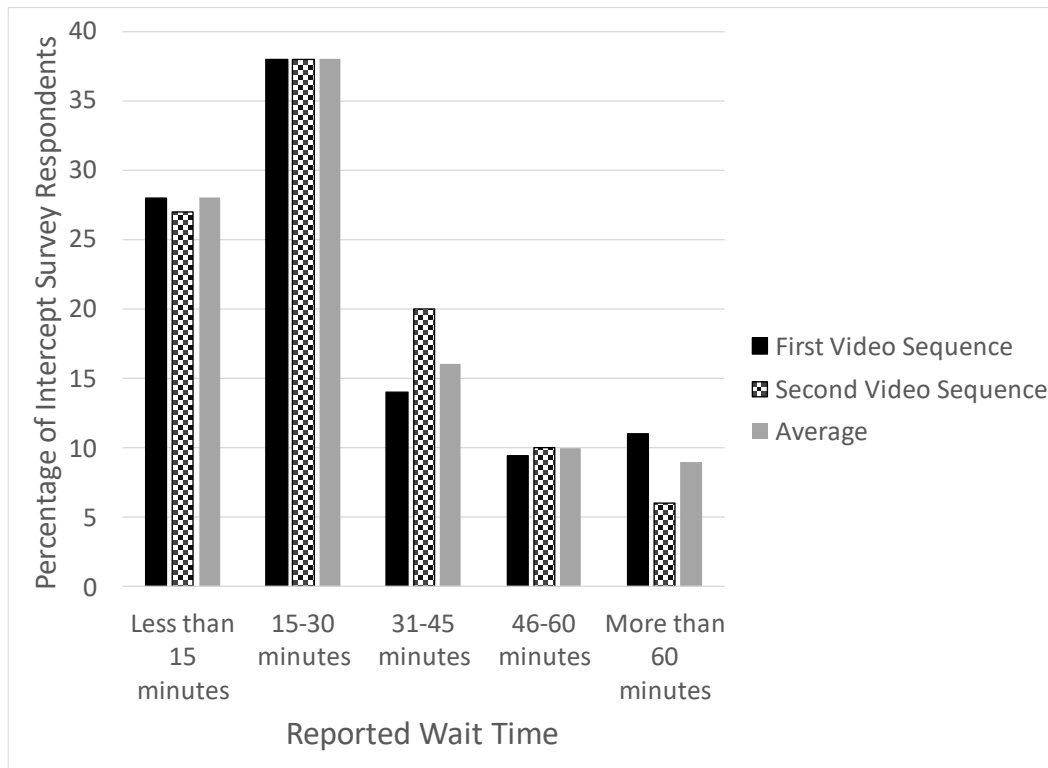


Figure 20: Percent of Intercept Survey Respondents, Reported Wait Time.

Overall, the reported wait times are consistent, with only the “31-45 minutes” and “More than 60 minutes” categories seemingly changing when comparing video sequences. It appears that during the second video sequence, survey respondents may have experienced slightly shorter wait times at the facilities. This could potentially reflect the increased demand for the services during the first video sequence when facilities reopened after COVID-19 closures transitioning to more normal operations during the second video sequence.

For each video sequence, the numbers by data collection period can be found in APPENDIX A: Intercept Surveys.

Figure 21 shows the wait times reported by data collection location for both video sequences.

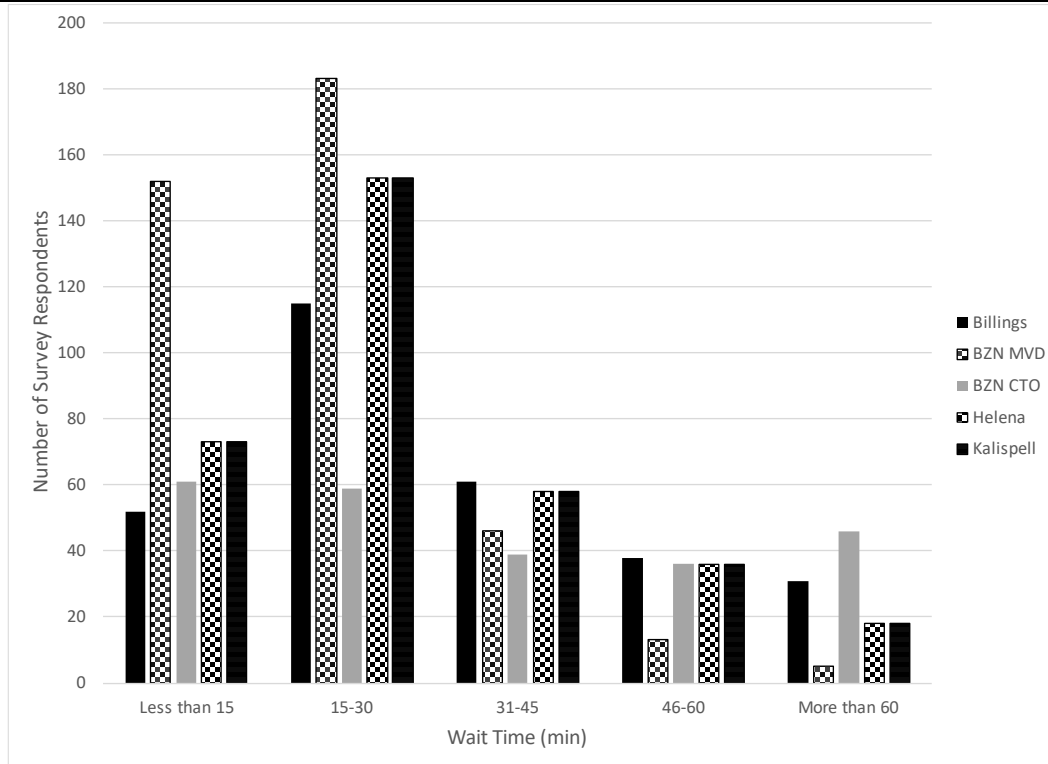


Figure 21: Reported wait times by location for both video sequences.

The reported wait times by location for each video sequence can be found in APPENDIX A: Intercept Surveys. Overall, Bozeman MVD seems to have the shortest wait time. In contrast, the Bozeman CTO seems to have one of the longest overall wait times when considering all intercept survey respondents. The other locations fall somewhere in between Bozeman MVD and Bozeman CTO. The longer wait times associated with the Bozeman CTO, may reflect the fact that CTOs only managed walk-ins whereas MVDs may allow for prescheduled appointments.

4.3.6 Demographics

Intercept survey respondents were asked to provide information about their age, gender identity, and the number of adults and children living in their household. Table 5 summarizes the data collected by video sequence.

Table 5: Age, Gender, Household Size, & Number of Children in Household.

Age, Gender, Household Size, & Number of Children in Household		Video Sequence		
		One	Two	All Data
		n = 932	n = 693	n = 1,625
Age	Minimum	18	18	18
	Average	45	47	46
	Median	43	46	44
	Maximum	86	90	90
		n = 933	n = 694	n = 1,627
Gender Identity	Male	504 (54.1%)	403 (58.1%)	907 (55.7%)
	Female	425 (45.6%)	288 (41.5%)	713 (43.8%)
	Non-Binary	3 (0.3%)	3 (0.4%)	6 (0.4%)
		n = 779	n = 599	n = 1,378
Household Size	Minimum	1	1	1
	Average	2.6	2.6	2.6
	Median	2	2	2
	Maximum	23	10	23
		n = 216	n = 185	n = 401
Number of Children in a Household (for households with children)	Minimum	1	1	1
	Average	1.9	2.0	2.0
	Median	2	2	2
	Maximum	7	6	7

Collecting this data would enable analyzing the impact of demographic information on traffic safety culture. For example, Islam et al. (Islam, Thue, & Grekul, 2017) found that age and gender influence traffic safety culture. Silva et al. (Silva, Laiz, & Tabak, 2020) similarly reported gender differences based on the type of video. Hence, survey respondents were asked this information during the intercept surveys to ensure that even if intercept survey respondents declined to participate in the follow-up survey, an analysis of this information could be conducted using the intercept survey data. Furthermore, as detailed in the Literature Review & Information Gathering section, MDT's media plans tend to focus on males ages eighteen to thirty-four. As shown in Table 5, men are slightly overrepresented and the desired age range falls within the data captured. Analysis of Intercept Survey Data provides details of how age, gender and the presence of children in a household may impact whether or not someone sees the TV, if they recall screen captures from the traffic safety videos, and if they recall slogans from the traffic safety videos.

4.3.6.1 Age

Overall, the data shows that a good age range was captured, with intercept survey respondents ranging in age from 18 to 90 years old; the second video sequence saw a slightly older sample. When comparing the median age of intercept survey respondents with U.S. Census Bureau data for Montana, the intercept survey respondents have a slightly older median age of 46 as compared with 40.1 (U.S. Census Bureau, 2020). While on-site data collectors had to restrict participation from those under eighteen years old, it was identified, that since younger folks were accessing these facilities to take driver license testing, future research efforts could include these individuals

by obtaining approval from MSU's IRB. It would allow for a better understanding of how traffic safety messages may or may not be getting to younger Montanans. For the first video sequence, one Helena CTO survey respondent did not provide their age for the first data collection period (August/September 2021). Four survey respondents (Bozeman MVD - 1) and Kalispell MVD - 3) did not provide their age during the second data collection period (October/November 2021). For the second video sequence, two Bozeman MVD and one Kalispell MVD survey respondent did not provide their age (or only provided an age range) during the first data collection period (April/May 2022). All survey respondents provided their age for the second data collection period of the second video sequence.

4.3.6.2 Gender Identity

Overall, there was a slight bias to more males (55.7%) responding to the survey than females (43.8%). Compared with the U.S. Census Bureau data for the state, 50.3% of Montana's population is male, so males are somewhat overrepresented (U.S. Census Bureau, 2020). In addition, while limited, a few intercept survey respondents identified as non-binary. Because of the relatively balanced distribution of females as compared with males, conveying traffic safety information at MVDs and CTOs may enable more evenly distributing the traffic safety education information to all gender identities. In addition, with males slightly overrepresented, this approach provides an opportunity to get to MDT's target population, as identified in their CHSP (males, aged eighteen to thirty-four).

One Helena CTO survey respondent did not provide their gender during the first data collection period (August/September 2021). Four survey respondents (Billings MVD – 2, and Kalispell MVD - 2) did not provide their gender during the second data collection period (October/November 2021).

For the second video sequence, every survey respondent in the second data capture provided their gender identity. For the first data capture, one survey respondent from Billings and one from Bozeman MVD did not provide their gender identity.

4.3.7 Memorable Aspects of the Traffic Safety Videos

Intercept survey respondents were asked to report if they recalled something particularly memorable about the information within the video sequence. All of the responses to this question (three hundred thirty-five total), organized by video sequence and data collection period, can be found in APPENDIX A: Intercept Surveys.

For both video sequences, even though survey respondents were instructed to provide comments specific to the traffic safety videos, many survey respondents commented on their overall experience (i.e., "Fast & polite"). Comments related to staff were referenced the most for the first video sequence (first data collection = 21, second data collection = 23, total = 44) with fewer mentioned during the second video sequence (first data collection = 28, second data collection = 10, total = 38).

Some also used this comment line as an opportunity to share that they had not seen the videos. Survey respondents indicating not haven seen the videos more frequently during the first video sequence (9 for the first data collection; 15 for the second data collection) than the second video sequence (5 for the first data collection; 3 for the second data collection), potentially reflecting, in

part, the move of the TV at the Billings MVD.

Eleven intercept survey respondents were able to cite the specific statistics (i.e., roundabouts contribute to an eighty percent reduction in crashes; the average time it takes looking away to send a text is five seconds). Citing a statistic may suggest that the information presented had an impact on the viewer.

Topics reported as memorable during the first video sequence were: all (1), know all slogans (2), seatbelt infographic (3); slow down, move over infographic (3); trivia (generic mention (4), motorcycles (3), roundabouts (14)); REAL ID video (8); screen captures (Slow Down and Move Over (6); Rules of the Roundabout (43); Gratitude Video (7); and Vision Zero – Just One Reason (9)); bicycle safety video (1); don't crowd the plow video (3); look twice, save a life video (on motorcycles) (6); Toward Zero Deaths (2); none (8), and other (12).

Topics reported as memorable during the second video sequence were: nothing was memorable (3); all (6); comment related to lack of video sound (2); trivia (general mention (8), distracted driving (14)); infographic on train crossings (1); infographic on rumble strips (4); infographic on child car seats (5); infographic on SAM I AM (6); screen captures (REAL ID video (6); BuckleUp (8); Slow Down for Friends (30); Yield (8); Slow Down for the Curve (19)); "The Right Seat – If You Love Them Enough – Play Place" video (6); roundabouts (3); Vision Zero (1); Helena 2nd Monitor topics (5); and other (12).

A few comments to highlight are as follows:

- ““Slow down for friends’ – This was a great reminder of people are valuable.”
- “the seconds it takes to look at your phone”
- “Looking away from the road distracts you for longer than you think”
- “almost cried at slow down one”
- “The people spilling groceries all over; him saying would you drive this way?”

For the second video sequence, the texting trivia information resonated with intercept survey respondents, as fourteen survey respondents specifically referenced it in their responses. It potentially suggests that viewers honestly did not understand that looking away for such a seemingly short period of time results in a vehicle moving for such a great distance. Advancing this topic may be more about education than necessarily changing behaviors (i.e., safety culture).

Overall, the comments suggest that the information conveyed within the video sequences provided additional value. However, the feedback suggests there exists more value in the information conveyed through the video sequences than could be captured in the intercept surveys due to the limited space for questions. For example, no questions were specifically asked about the impacts of the trivia on people's perceptions of whether or not they would be a safer driver or if it made them change a driving behavior. These present opportunities for future research.

4.3.8 Recall of Video Screen Capture


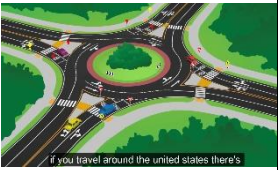






As mentioned earlier, the video sequences were a compilation of videos, infographics, trivia slides, and transition slides. As described by Silva et al. (Silva, Laiz, & Tabak, 2020), videos have been found to captivate one's attention, and can be effective when trying to impact behavior.

Consequently, a select screen capture from videos within the video sequence were included in the associated intercept survey. They were also expected to be an effective way to assist visual learners with recall of the traffic safety information.

On average, for the first video sequence, 1.6 screen captures were recalled, with four being the maximum and one the median. For the second video sequence, the average recall was 1.9, with four the maximum and two the median.

Similar percentages of survey respondents recalled at least one screen capture for each video sequence (24.2% vs. 25.6%) (Table 6). Not every intercept survey respondent who reported seeing the TV also reported recalling a screen capture. Since the screen captures were not consistent across the survey instruments for the first and second video sequences, caution should be used when comparing these results. For the first video sequence, the “Rules of the Roundabout” screen capture was reported by most intercept survey respondents. For the second video sequence, the “Slow Down for Friends” screen capture was the most recalled. Because the roundabout video was by far the longest video in the first video sequence, the number of intercept survey respondents who reported recalling this screen capture is likely reflective of the length. Therefore, these differences could be attributed to the different run time of the videos in each video sequence, or the screen capture shown may resonate more with intercept survey respondents. It could also be some combination of the two factors. In particular, MDT is constructing many roundabout intersections statewide. The video itself can be described as technical, so when considering the results from Silva et al. (Silva, Laiz, & Tabak, 2020), one would not anticipate the recall to be as significant as say, the “Slow Down for Friends” video, which may be better described as shocking (Silva, Laiz, & Tabak, 2020) or as intending to engage the viewer’s empathy as with branded entertainment (Yoh, Uchiyama, Hung, & Doi, 2019). An important difference between Silva et al.’s research (Silva, Laiz, & Tabak, 2020) and the videos shown within the first video sequence in this project is that Silva et al. used videos of comparable lengths.

Table 6: Number and Percent of Survey Respondents Recalling Screen Captures, Length of Video, Percent of Video Length Representing Entire Video Length.

First Video Sequence	Screen Capture				
	Number & % Recall	<ul style="list-style-type: none"> 70 intercept survey respondents (30.8%) Length of video = 32 seconds (7.5% of video sequence loop) 	<ul style="list-style-type: none"> 189 intercept survey respondents (83.3%) Length of video = 137 seconds (32.2% of video sequence loop) 	<ul style="list-style-type: none"> 40 intercept survey respondents (17.6%) Length of video = 30 seconds (7.1% of video sequence loop) 	<ul style="list-style-type: none"> 57 intercept survey respondents (25.1%) Length of video = 30 seconds (7.1% of video sequence loop)
	n = 227 (24.2%)				
Second Video Sequence	Screen Capture				
	Number & % Recall	<ul style="list-style-type: none"> 53 intercept survey respondents (29.8%) Length of video = 30 seconds (9.2% of video sequence loop) 	<ul style="list-style-type: none"> 122 intercept survey respondents (68.5%) Length of video = 30 seconds (9.2% of video sequence loop) 	<ul style="list-style-type: none"> 72 intercept survey respondents (40.4%) Length of video = 40 seconds (12.3% of video sequence loop) 	<ul style="list-style-type: none"> 94 intercept survey respondents (52.8%) Length of video = 45 seconds (13.8% of video sequence loop)
	n = 178 (25.6%)				

For the second video sequence, the videos were of comparable lengths, therefore the greater reporting of recall by intercept survey respondents of the “Slow Down for Friends” video does suggest that it captures more attention than the other videos based on the style of the video, without relying on greater length for recall. It tries to leverage the empathy of viewers in order to disseminate its message, which has been suggested as an effective method by Yoh et al. (Yoh, Uchiyama, Hung, & Doi, 2019). The results of this data suggest that two successful methods to convey priority messages would be to choose videos that are longer than the other videos and to

choose videos that engage the viewer's empathy. A similar trend held for the second data collection period. Figure 22 provides an overview of the screen capture recall frequency during the first and second video sequence, broken down by data collection period. For each video sequence, the reported recall of each screen capture remained consistent across the data collection periods, suggesting that seasonality does not have an influence.

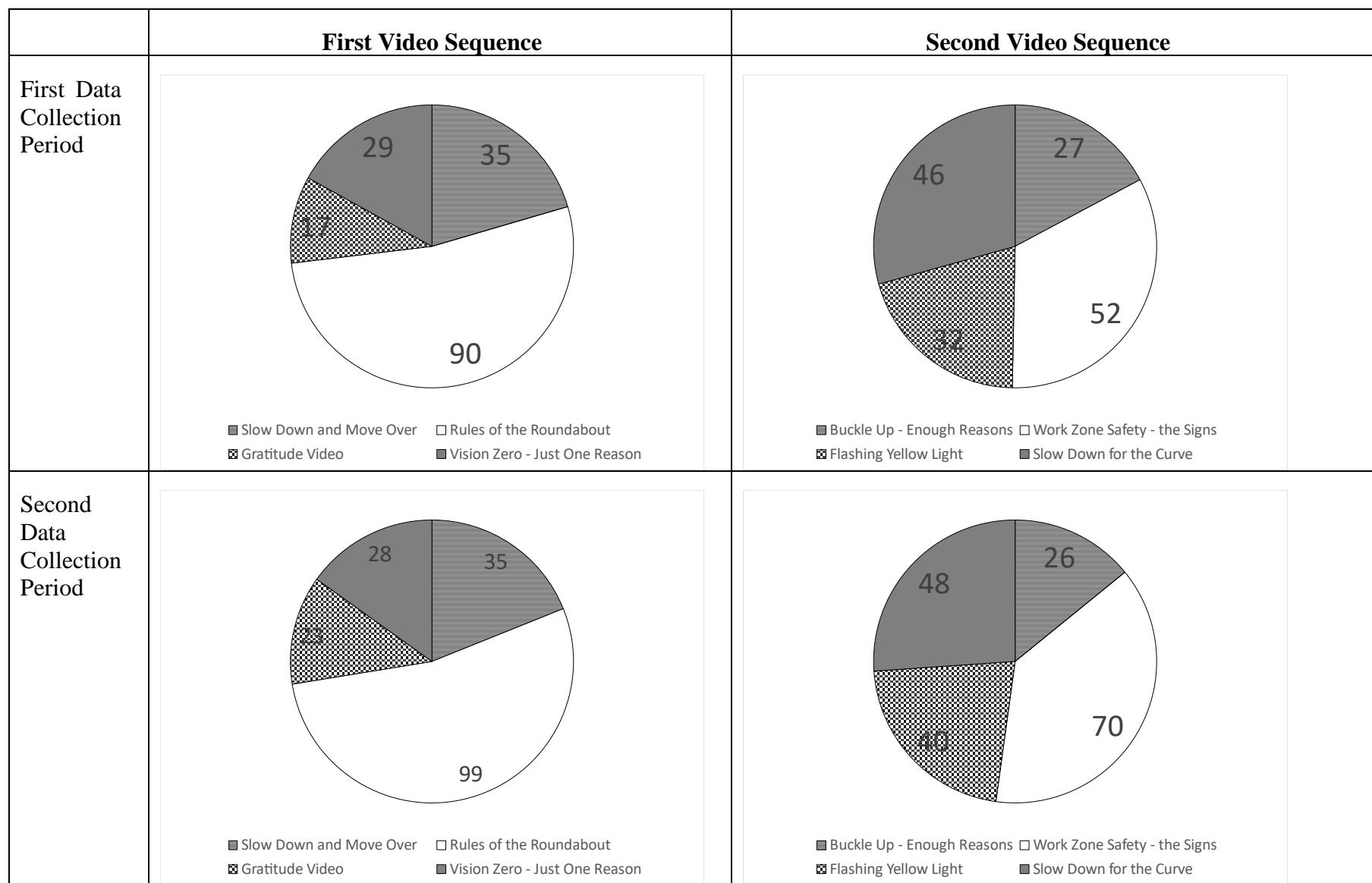


Figure 22: Frequency that each screen capture was recalled during the first and second video sequence, broken down by data collection period.

4.3.9 Recall of Slogans

In addition to the videos, slogans were included in the video sequences. Intercept survey respondents were asked whether they recalled the slogans included throughout the video sequence shown on the TVs. Table 7 shows the number of intercept survey respondents reporting the recall of each slogan, broken down by location. Each intercept survey respondent could identify more than one slogan if applicable; therefore, the subtotal could far exceed the 176 and 194 intercept survey respondents who reported recalling at least one slogan for each video sequence (i.e., 379 exceeding 194 means that many more intercept survey respondents in the second video sequence recalled more than one slogan).

Table 7: Number and Percent of Survey Respondents Recalling Slogans.

	Slogan	Billings MVD	Bozeman CTO	Bozeman MVD	Helena CTO	Kalispell MVD	TOTAL
First Video Sequence		n = 176 (18.8%)					
	Slow down and move over.	3	18	38	23	22	104
	Never Drink and Drive	11	27	30	25	33	126
	What's your one reason?	3	12	21	12	5	53
	Don't Crowd the Plow	4	16	22	17	16	75
	Slow down, look around, be ready to yield.	8	30	38	20	24	120
	Subtotal	29	103	149	97	100	178
Second Video Sequence		n = 194 (27.9%)					
	Check for trains	37	8	19	12	7	83
	SAM I AM	28	5	14	7	4	58
	The right seat	22	0	11	8	0	41
	Slow down for the curve	50	10	28	24	16	128
	Stop speeding before it stops you	23	7	13	16	10	69
	Subtotal	160	30	85	67	37	379
TOTAL		189	133	234	164	137	557

“Never Drink and Drive” and “Slow down, look around, be ready to yield” were the two most frequently reported slogans from the first video sequence (Figure 23).

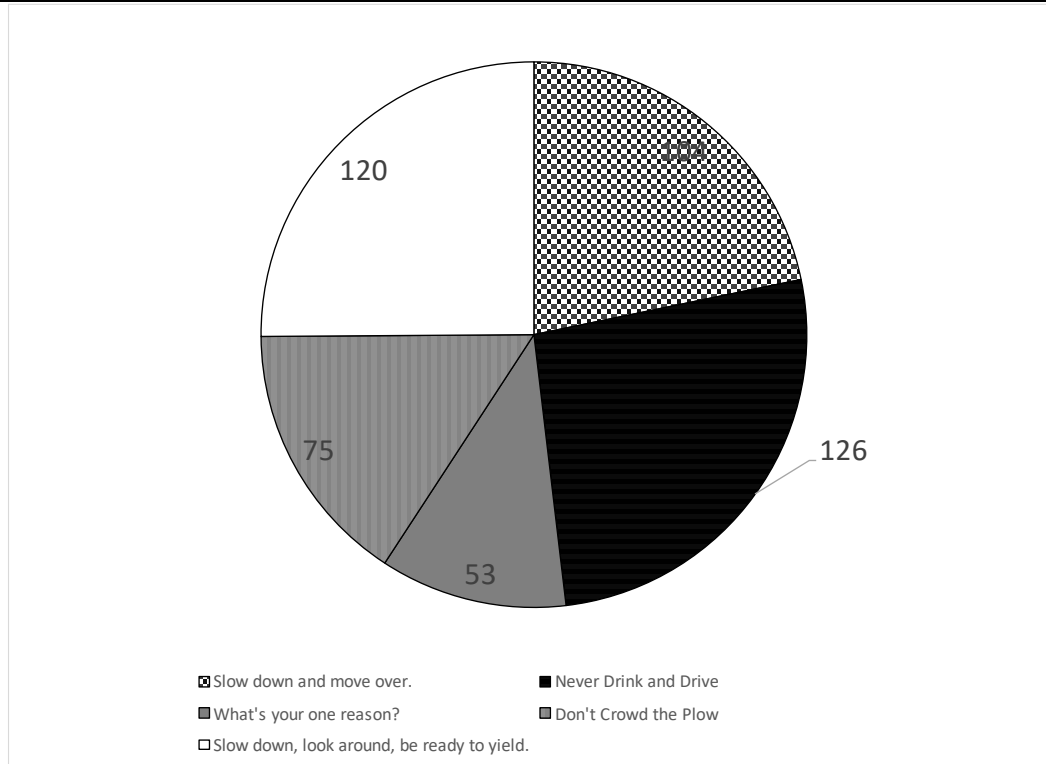


Figure 23: Number of times a slogan was recalled during the first video sequence.

While intercept survey respondents were instructed to report what they recalled from the videos, it is very likely that reporting “Never Drink and Drive” most frequently also represents an overall saturation of that slogan from other educational efforts (i.e., TV and radio public service announcements).

“Slow Down for the Curve,” by far, was the most frequently reported slogan for the second video sequence (Figure 24).

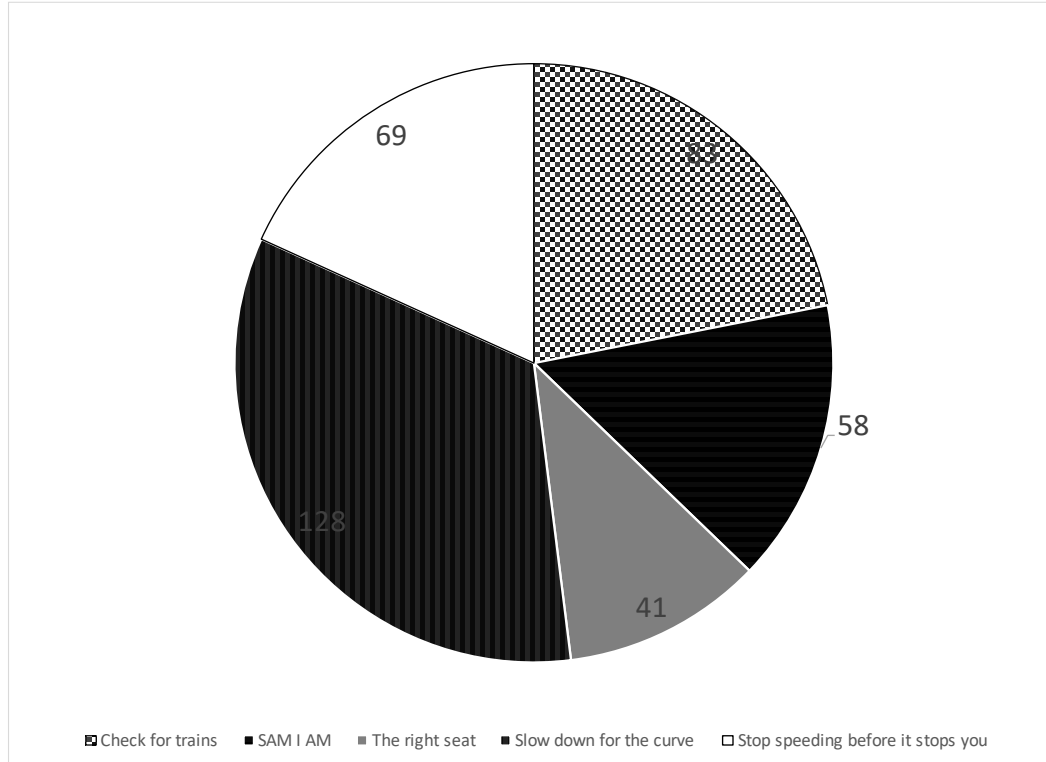


Figure 24: Number of times a slogan was recalled during the second video sequence.

Whereas videos may have different run times, slogans were generally displayed for a similar time frame. Consequently, there should be a similar expectation for them to be recalled. However, for those that were recalled, they were either associated with a video (“Slow down for the curve” and “Slow down, look around, be ready to yield”) or were associated with a long-term campaign effort (“Never drink and drive”).

4.4 Analysis of Intercept Survey Data

After reviewing the data collected, the researchers began to analyze the relationships between the collected data and hypotheses. The following sections investigated: 1) the zip code relationship to screen capture and slogan recall; 2) the influence of data collection location, reported wait time, gender, and age on seeing the TV, 3) the influence of data collection location, reported wait time, gender, age, and presence of children in a household on screen capture recall; 3) the influence of data collection location, reported wait time, gender, age, and presence of children in a household on slogan recall, and 4) confusion demonstrated within the survey as evident by unexpected responses.

4.4.1 Zip Code Relationship to Screen Capture and Slogan Recall

The researchers were interested in determining if there existed a bias regarding which screen captures from the videos and which slogans were recalled based on their reported residence, as identified based on the zip code provided by the survey respondent, as it may highlight other on-going MDT educational efforts or suggest localized safety culture differences across Montana. The following figures show the percentage of intercept survey respondents that reported recalling the roundabout video screen capture (which had one of the largest recalls) (Figure 25); those that recalled the “Slow Down & Move Over” screen capture (Figure 26); and the “Never Drink and Drive” slogan (which was one of the most commonly recalled slogans) (Figure 27).

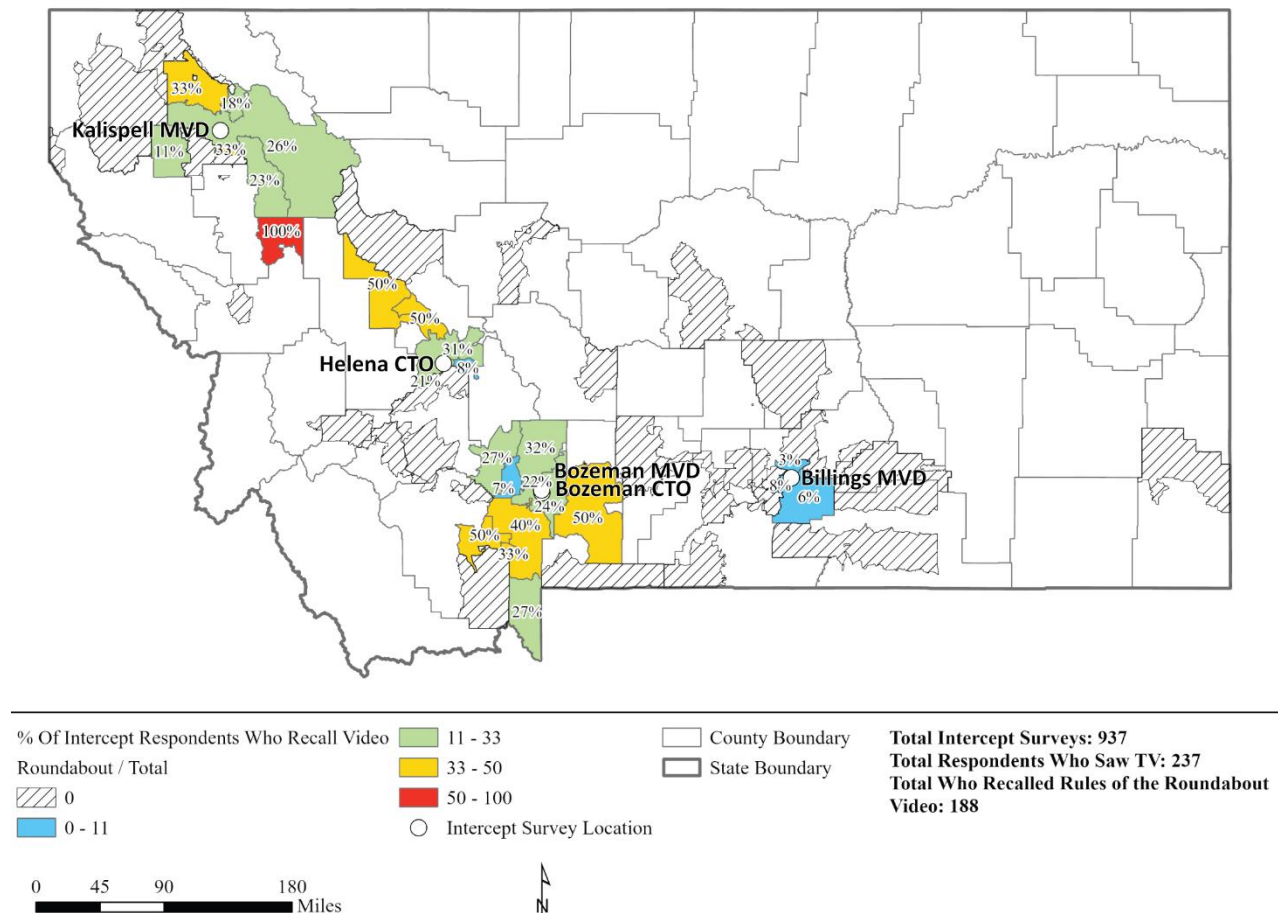


Figure 25: Recall of Rules of the Roundabout Screen Capture (First Video Sequence).

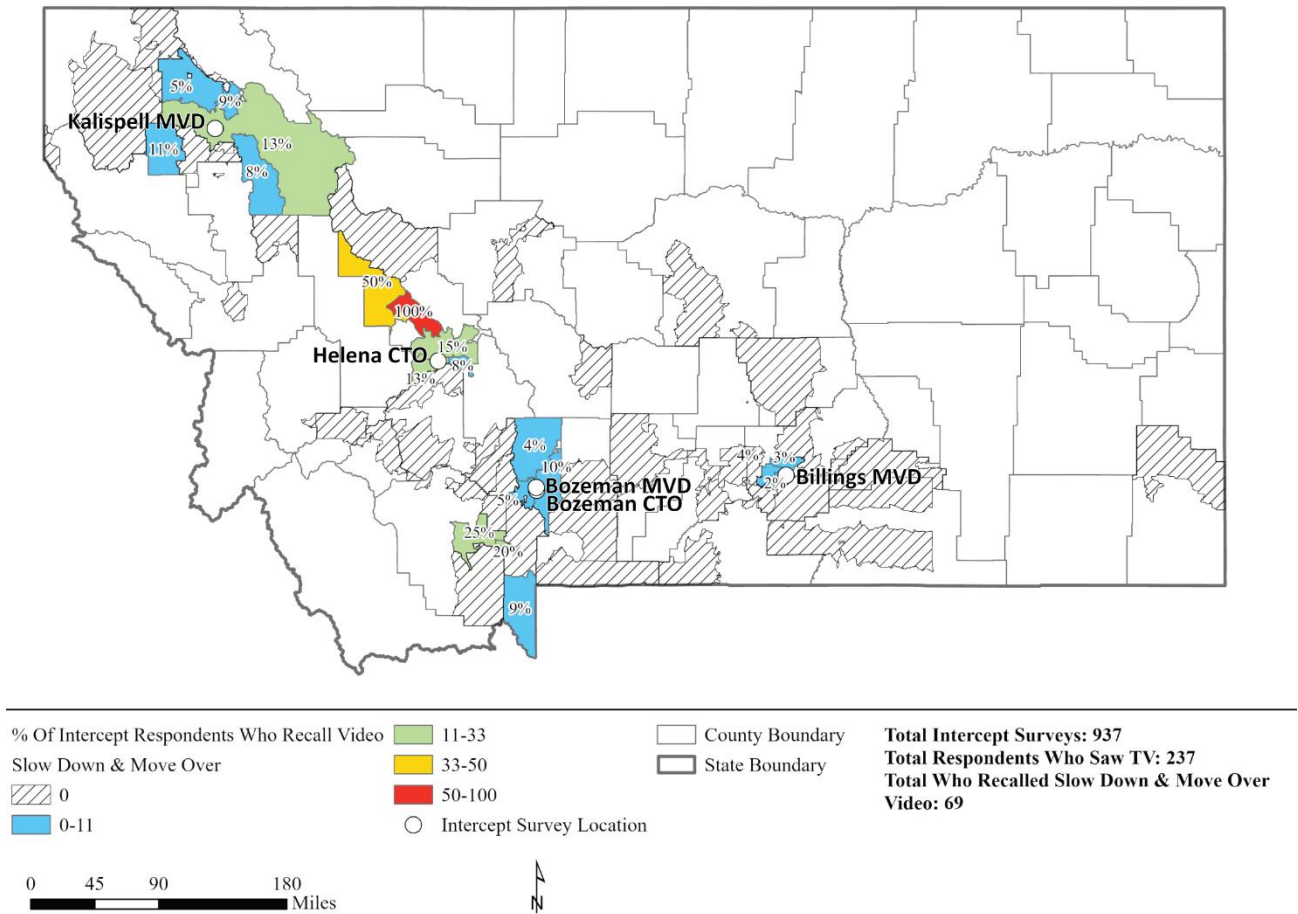


Figure 26: Recall of Slow Down & Move Over Screen Capture (First Video Sequence).

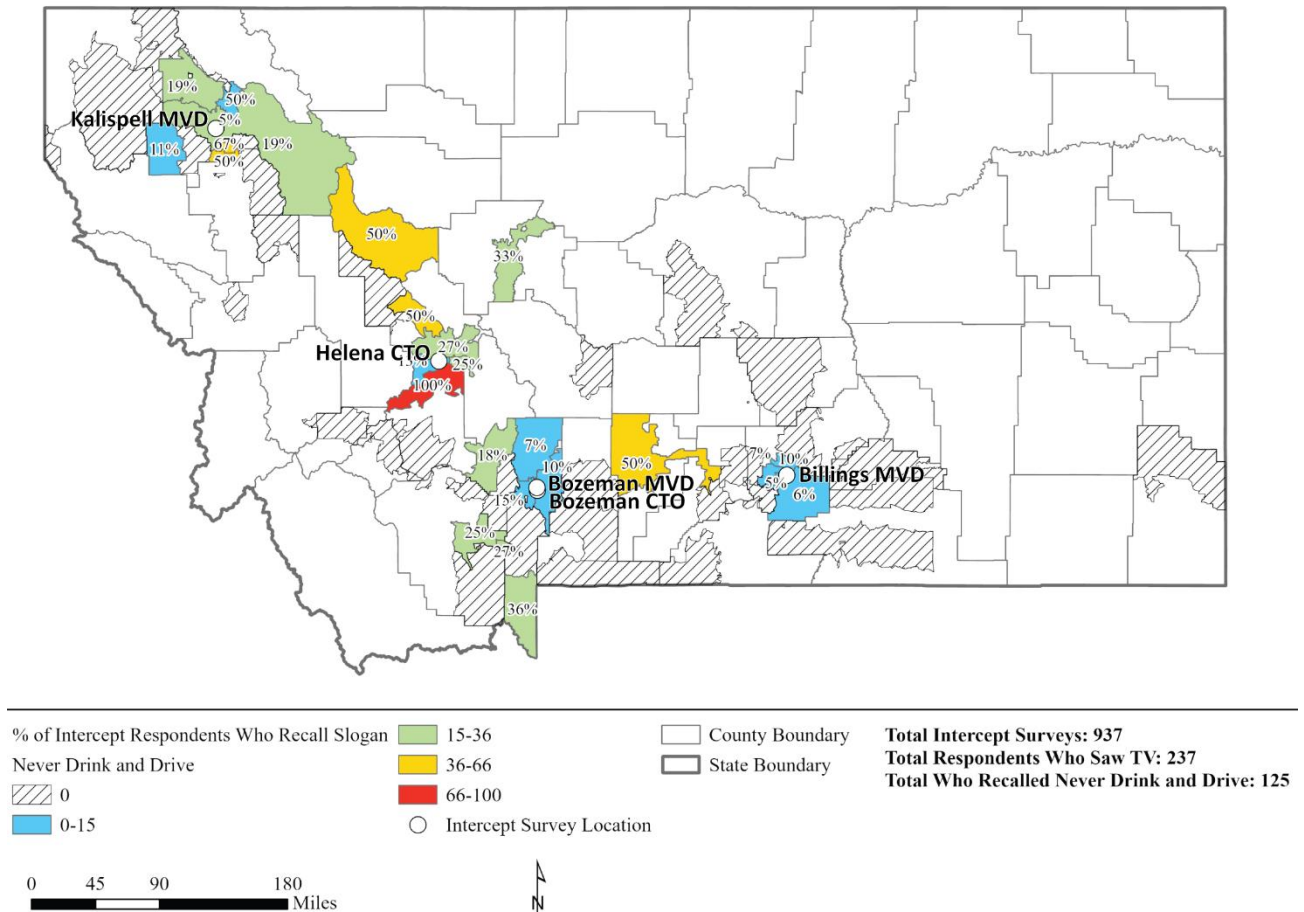


Figure 27: Recall of the Never Drink and Drive Slogan (First Video Sequence).

Overall, with limited data, the ability to draw meaningful conclusions is elusive. As the data is subdivided into zip codes, the number of survey respondents in outlying zip codes becomes fewer, with some exceptions (see Figure 16 for the number of survey respondents by zip code). Therefore, the percentages go from very low to high for most of these outlying zip code polygons based on whether or not a survey respondent reports or does not report recalling a screen capture or slogan. Hence, if a significantly larger sample size, or purposeful oversampling of survey respondents from the outlying zip codes were achieved, there is a possibility that there are differences of reporting different video screen captures or slogans by location. Such an analysis could be considered for future research efforts if substantially more data could be collected. However, to do so would be a large financial investment. The value of the information learned from such efforts must be weighed with fiscal resources available.

4.4.2 Influences in Seeing the TV: Data Collection Location, Reported Wait Time, Gender, & Age

This section looks at several factors that may influence whether or not a patron saw a TV: 1) data collection location, 2) reported wait time, 3) gender, and 4) age. Two different statistical comparison tools were used: differences between two population proportions and testing differences between two means with independent samples dependent upon if the data was an indicator variable or continuous. All of the results are compared to the 95% confidence interval, where $Z = 1.96$. If the value is greater than $Z = 1.96$, the cell is shaded.

4.4.2.1 Data Collection Location

First, the researchers investigated if there was a statistical difference when comparing facilities to one another regarding whether or not someone reported viewing the TV. Because whether or not someone viewed a TV is a binary, yes or no response, the appropriate test is to look at the differences between two population proportions (Table 8). (Note: The data includes that from both video sequences, where the TV at the Billings MVD location was moved between video sequences.)

Table 8: Number of Survey Respondents Who Reported Seeing the TV, Where No Response was Provided, and the Total Number of Observations for Each Data Collection Location.

	Billings MVD	Bozeman MVD	Bozeman CTO	Helena CTO	Kalispell MVD
Number of observations, n	303	402	337	246	344
Number of observations where no response was provided	7	10	10	5	3
Number of visitors that reported seeing the TV	109	95	133	95	86
Proportion of visitors who saw the TV	0.37	0.24	0.41	0.39	0.25

The resulting Z statistic when comparing each of the locations individually is summarized in Table 9.

Table 9: Z Statistic for Comparing Locations Seeing a TV.

	Billings MVD	Bozeman MVD	Bozeman CTO	Helena CTO	Kalispell MVD
Billings MVD	-	3.6	-0.98	-0.62	3.2
Bozeman MVD	-	-	-4.7	-4.4	-0.31
Bozeman CTO	-	-	-	0.30	4.3
Helena CTO	-	-	-	-	3.6

The results show that the absolute value of the Z statistic would suggest that the Kalispell MVD and Bozeman MVD have the greatest differences from the other locations. As noted in the prior section, the TV monitor in Kalispell MVD is not in a desirable location. For Bozeman MVD, this could potentially reflect people's ability to not have to remain in the lobby until called. Also, as discussed in the previous sections, the Bozeman MVD TV location was less than desirable. Both of these locations (Kalispell MVD and Bozeman MVD) had the lowest reported proportion of visitors who saw the TV. These results suggest that the location of the TV and policies regarding whether or not one has to wait in the facilities may influence whether or not the traffic safety messages on the TV are viewed. Consequently, if traffic safety messages are to be displayed on TVs in these facilities as a way to educate the public and potentially influence traffic safety culture, the location of the TV and policies regarding waiting can expect to impact their effectiveness.

4.4.2.2 Reported Wait Time

Next, the researchers investigated if there was a statistical difference when comparing the length of reported wait time to whether or not an intercept survey respondent reported seeing the TV. Because time was binned into categories rather than a true wait time value (i.e., 34 minutes), the appropriate test is to look at the differences between two population proportions (Table 10).

Table 10: Overview of Observations Based on Reported Wait Time.

	Less than 15 minutes	15-30 minutes	31-45 minutes	46-60 minutes	More than 60 minutes
Number of observations, n	446	603	262	157	137
Number of observations where no response was provided	12	12	4	5	5
Number of visitors that reported seeing the TV	99	180	105	66	63
Proportion of visitors who saw the TV	0.23	0.30	0.41	0.43	0.48

The resulting Z statistic when comparing each of the locations individually is summarized in Table 11.

Table 11: Z Statistic for Reported Wait Time & Seeing a TV.

	Less than 15 minutes	15-30 minutes	31-45 minutes	46-60 minutes	More than 60 minutes
Less than 15 minutes	-	-2.7	-5.0	-4.9	-5.5
15-30 minutes	-	-	-2.9	-3.7	-3.8
31-45 minutes	-	-	-	-0.54	-1.3
46-60 minutes	-	-	-	-	-0.73

The results suggest that there are three appropriate categories regarding whether or not someone saw the TV based on their reported wait time: Less than 15 minutes; 15-30 minutes; and More than 30 minutes. It also suggests that, as expected, the longer someone waits, the more likely they are to see the TV.

4.4.2.3 Gender

The researchers wanted to test if gender, across both video sequences, had a statistically significant influence regarding whether or not a survey respondent viewed the TV with the safety content. (Note: With only six survey respondents identifying as non-binary, the data sample is too small to compare). Because a category was created where male was identified as 0 and female as 1, the appropriate test is to look at the differences between two population proportions.

The researchers wanted to understand: Is there a statistically significant difference between whether or not males reported viewing the TV when compared with females? With $Z = -0.41$, a

statistically significant difference was not found.

Table 12: Viewing the TV, by Gender.

Gender	n	Reported seeing a TV	Did not provide a response regarding if he/she viewed the TV
Male	907	283	22
Female	713	229	18
Non-Binary	6	2	0

4.4.2.4 Age

The researchers wanted to test if age, across both video sequences, had a statistically significant influence regarding whether or not a survey respondent viewed the TV with the traffic safety videos. Because survey respondents were asked to provide their age, rather than choose a category that represented an age range, the appropriate test is differences between two means with independent samples. Therefore, the researchers compared the average age of survey respondents who reported seeing the TV with the average age of those who did not.

Table 13: Viewing the TV, by Age.









Statistic	Saw TV	Did Not See TV
Minimum	18	18
Average	44	47
Maximum	87	90
Standard Deviation	17	18
n	517	1068
Z	-3.0	

As shown, those who reported seeing the TV were slightly younger. The result was statistically significantly different. This result would suggest that age is a factor when evaluating whether someone saw the TV. However, caution must be taken when drawing such conclusions, as the standard deviations are large (seventeen and eighteen) and the differences between the average ages are small (three). Because n is large, the test may be overly sensitive (Armstrong, 2019).

4.4.3 Screen Capture Recall

To test if visual learners may recall the videos, eight screen captures were presented in the intercept surveys across the two video sequences. For the reader's reference, the screen captures and associated video title are presented in Table 14.

Table 14: Screen Capture and Associated Video Title, by Video Sequence.

	Screen Capture	Associated Video Title
First Video Sequence		Slow Down and Move Over
		Rules of the Roundabout
		Gratitude Video
		Vision Zero – Just One Reason
Second Video Sequence		Buckle Up – Enough Reasons
		Work Zone Safety – the Signs
		Flashing Yellow Light
		Slow Down for the Curve

This section reviews if any screen capture images resonated with subgroups within Montana by

looking for patterns by location (i.e., Helena CTO versus Bozeman MVD) for each video sequence. Then after, it discusses the relationship between longer reported wait times and a greater retention of the number of screen captures. Next, it examines if gender influences whether a screen capture is recalled, followed by age, then if the presence of a child in a household influences if a screen capture is recalled.

4.4.3.1 Data Collection Location

Each video screen capture was investigated to determine if there is a difference between whether or not it is recalled by location. First, the screen captures included for the first video sequence are considered followed by the screen captures included for the second video sequence.

4.4.3.1.1 Screen Captures for the First Video Sequence

Overall, the number of survey respondents that reported seeing each of the screen captures for the first video sequence was small: 70 for “Slow Down and Move Over;” 189 for “Rules of the Roundabout;” 40 for “Gratitude Video;” and 57 for “Vision Zero – Just One Reason,” with the “Rules of the Roundabout” screen capture being recalled by the greatest number of people for every location (Figure 28).

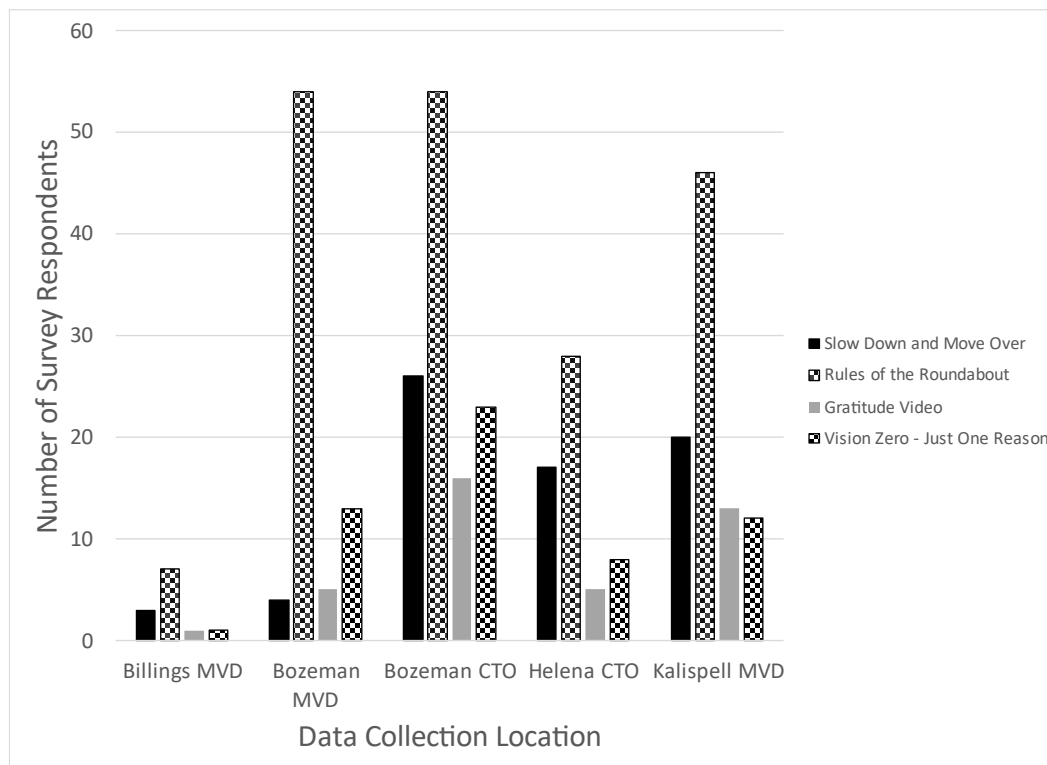


Figure 28: Number of Survey Respondents Recalling Each Screen Capture for the First Video Sequence by Data Collection Location.

The “Rules of the Road Roundabout” screen capture had the greatest number of survey respondents reporting that they viewed it. Consequently, the researchers investigated if there were any statistically significant differences when considering the location where the data was collected (Table 15).

Table 15: Z Statistic for “Rules of the Roundabout” Screen Capture Recall, by Data Collection Location.

	Billings MVD	Bozeman MVD	Bozeman CTO	Helena CTO	Kalispell MVD
Billings MVD	-	-4.8	-5.8	-5.2	-5.3
Bozeman MVD	-	-	-1.4	-1.1	-0.79
Bozeman CTO	-	-	-	0.19	0.51
Helena CTO	-	-	-	-	0.25

The only observable statistically significant difference is between Billings MVD and the other locations. However, since the data sample is small, and the TV was in a less than desirable location for the first video sequence, this probably reflects the location of the TV rather than differences between the locations.

Overall, it does not seem like statistics can be used to uncover any potential recall differences with respect to the screen captures based on data collection location, given the limited data sizes.

4.4.3.1.2 Screen Captures for the Second Video Sequence

Overall, the number of survey respondents that reported seeing each of the screen captures for the second video sequence was small: 53 for “Buckle Up – Enough Reasons;” 122 for “Work Zone Safety – the Signs;” 72 for “Flashing Yellow Light;” and 94 for “Slow Down for the Curve,” with the “Work Zone Safety – the Signs” screen capture being recalled by the greatest number of people for every location (Figure 29).

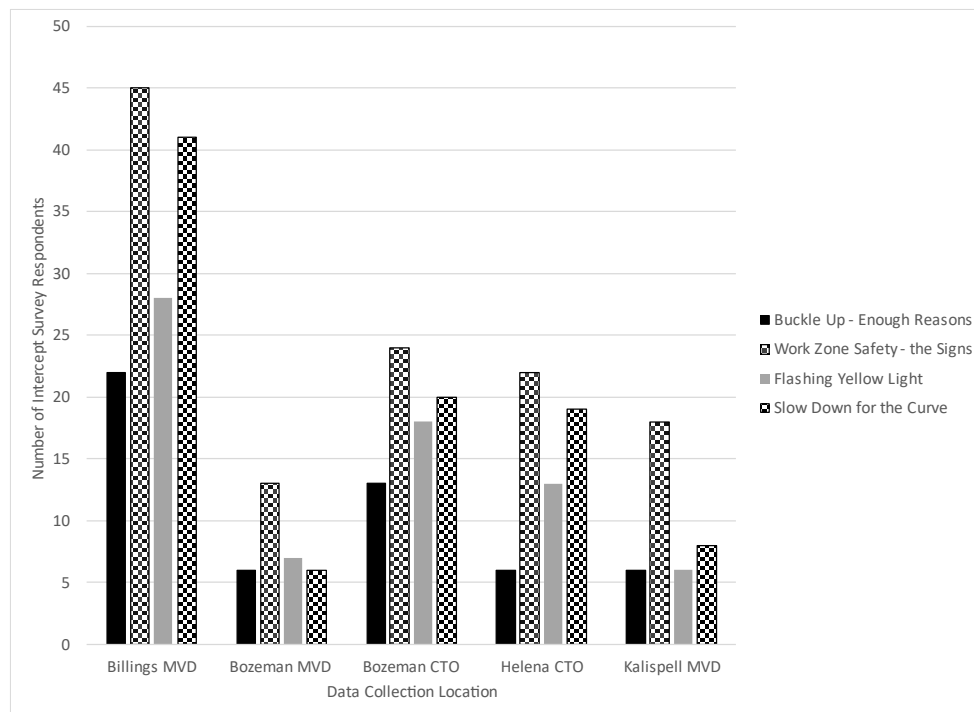


Figure 29: Number of Survey Respondents Recalling Each Screen Capture for the Second Video Sequence by Data Collection Location.

4.4.3.2 Reported Wait Time

Next, the researchers wanted to better understand if the reported wait time influenced whether or not they reported recalling at least one screen capture. Consequently, by video sequence, the researchers investigated the relationship between recalling at least one screen capture and the reported wait time.

The majority of intercept survey respondents that reported recalling at least one screen capture reported their wait time to be between 15 and 30 minutes; however, from a rate perspective (i.e., recall of at least one screen capture as compared with the number of intercept survey respondents reporting the wait time), those that waited the longest had the greatest proportion. The rates of the number of people recalling at least one screen capture based on their reported wait time increased as the reported wait time increased. Overall, 223 intercept survey respondents reported recalling at least one screen capture from a video during the first video sequence (Table 16).

Table 16: Recall of at Least One Screen Capture by Reported Wait Time, First Video Sequence.

	Less than 15 minutes	15-30 minutes	31-45 minutes	46-60 minutes	More than 60 minutes
Number of observations, n	262	346	128	87	98
Recalled at least one screen capture	39	84	34	30	36
Proportion of visitors who recalled at least one screen capture for the first video sequence	0.15	0.24	0.27	0.34	0.37

The data was analyzed to identify if the reported wait time categories had similar proportions of intercept survey respondents recalling at least one screen capture. The results would suggest that whether or not an intercept survey respondent during the first video sequence observed at least one of the screen captures is impacted by their reported wait time (Table 17). The results suggest that the five categories potentially break down into the following three categories: less than 15 minutes; 15-45 minutes; more than 45 minutes.

Table 17: Z Statistic for Reported Wait Time & Recalling at Least One Screen Capture for the First Video Sequence.

	Less than 15 minutes	15-30 minutes	31-45 minutes	46-60 minutes	More than 60 minutes
Less than 15 minutes	-	-2.9	-2.8	-4.0	-4.5
15-30 minutes	-	-	-0.51	-2.2	-2.5
31-45 minutes	-	-	-	-1.2	-1.6
46-60 minutes	-	-	-	-	-0.32

The same analysis was conducted for the second video sequence; however, the overall sample size was smaller, with 177 intercept survey respondents reporting recalling at least one screen capture from a video (Table 18).

Table 18: Recall of at Least One Screen Capture by Reported Wait Time, Second Video Sequence.

	Less than 15 minutes	15-30 minutes	31-45 minutes	46-60 minutes	More than 60 minutes
Number of observations, n	184	257	134	70	39
Recalled at least one screen capture	25	63	47	27	15
Proportion of visitors who recalled at least one screen capture for the first video sequence	0.14	0.25	0.35	0.39	0.38

The categories for the second video sequence were somewhat different: 1) less than 15 minutes, 2) 15-30 minutes, and 3) more than 30 minutes (Table 19).

Table 19: Z Statistic for Reported Wait Time & Recalling at Least One Screen Capture for the Second Video Sequence.


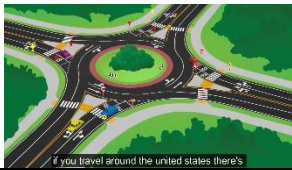


	Less than 15 minutes	15-30 minutes	31-45 minutes	46-60 minutes	More than 60 minutes
Less than 15 minutes	-	-2.8	-4.5	-4.4	-3.7
15-30 minutes	-	-	-2.2	-3.0	-1.8
31-45 minutes	-	-	-	-0.49	-0.39
46-60 minutes	-	-	-	-	0.011

Overall, considering both video sequences, a survey respondent was more likely to have reported at least one screen capture if they reported a longer wait time. Therefore, if changes were made at the facilities which would significantly and consistently reduce the wait time, the effectiveness of displaying traffic safety information on TVs can expect to diminish.

4.4.3.3 Gender

The researchers wanted to understand: Is there a statistically significant difference when comparing if more males than females reported recalling a screen capture for each video sequence? The researchers first investigated if there were differences in recall by gender for the screen captures used for the first video sequence (Table 20).

Table 20: Z Statistic for Male versus Female Screen Capture Recall, First Video Sequence.

	Male	Female	Non-Binary	Total	Z
n	504	425	3		-
Slow Down and Move Over 	38	31	0	70	0.14
Rules of the Roundabout 	100	88	0	189	-0.33
Gratitude Video 	21	18	0	40	-0.052
Vision Zero – Just One Reason 	34	22	0	57	1.0

Overall, as shown, the sample sizes for each screen capture are small (Note: Recall that one survey respondent did not identify their gender for the first video sequence). While not statistically significantly different at the 95% confidence level, the results suggest a potential that the screen capture associated with the video, “Vision Zero – Just One Reason,” was more impactful for males than females. A larger sample size is needed to confirm or refute this result. A difference would not be surprising considering that the focus of this video is to encourage men to wear a seatbelt.




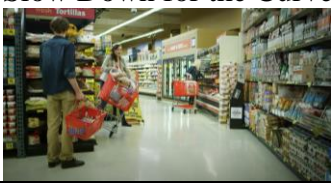
To more fully aggregate the information, the data from the first video sequence was then analyzed to better understand if males as compared to females differed in recalling at least one screen capture (Table 21). With $Z = 0.14$, there was no statistically significant difference when comparing male versus female recall of at least one screen capture.

Table 21: Reported Recalling at Least One Screen Capture, by Gender, First Video Sequence.

Gender	n	Reported recalling at least one screen capture
Male	504	123
Female	425	102
Non-Binary	3	0

This entire process was repeated for the second video sequence (Table 22).

Table 22: Z Statistic for Male versus Female Screen Capture Recall, Second Video Sequence.

	Male	Female	Non-Binary	Total	Z
n	403	288	3	694	-
Buckle Up – Enough Reasons 	31	21	1	53	0.20
Work Zone Safety – the Signs 	62	58	1	121	-1.6
Flashing Yellow Light 	43	27	2	72	0.56
Slow Down for the Curve 	51	40	2	93	-0.47

Overall, as shown, the sample sizes for each screen capture are small. The results suggest that the screen capture associated with the video, “Work Zone Safety – the Signs,” was more impactful for females than males. This result is somewhat unexpected, as women were only mentioned once within the video. One intercept survey respondent even noted the lack of female representation within the video. A larger sample size is needed to confirm or refute this result.

To more fully aggregate the information, the data from the second video sequence was then analyzed to better understand if males as compared to females differed in recalling at least one screen capture when compared with the other (Table 23). With $Z = -0.37$, there was no statistically significant difference when comparing male versus female recall of at least one screen capture.

Table 23: Reported Recalling at Least One Screen Capture, by Gender, Second Video Sequence.





Gender	n	Reported recalling at least one screen capture
Male	403	100
Female	288	75
Non-Binary	3	2





With the available data, there currently exists no statistically significant difference (at the 95% confidence level) comparing males to females with respect to the recall of all eight screen captures or when comparing the proportion of males with females that recalled at least one screen capture. However, one screen capture for both video sequences (Vision Zero – Just One Reason; Work Zone Safety – the Signs) would be statistically significantly different at a reduced confidence level.

4.4.3.4 Age

The researchers were interested in determining if statistically significant differences (at the 95% confidence level) existed when comparing the average age of survey respondents who reported seeing each and at least one screen capture with the average age of those that did not. The results suggest a difference in age for each screen capture being recalled from the first video sequence, except for “Vision Zero – Just One Reason” (Table 24). The average age of the sample that recalled the screen captures during the first video sequence was slightly younger. The opposite was true for the screen captures associated with the second video sequence, where there was no statistically significant difference between the samples that recalled the screen capture when compared with those that had not, except for the screen capture associated with the video “Work Zone Safety – the Signs.” For both video sequences, a statistically significant difference (at the 95% confidence level) was found between the average age of those who recalled at least one screen capture, again, with those that recalled at least one having a slightly younger average age. While some of the differences between recall samples may reflect a reduced ability to recall information with age, there is potentially a compounding factor associated with the topic of the video, as not all videos were found to have a statistically significant difference. Furthermore, those differences were not specific to only the smallest of sample sizes.

Table 24: The Influence of Average Age in Recall of Each and At Least One Screen Capture.





	Video		Minimum	Average	Maximum	Std Dev	n	Z
First Video Sequence	Vision Zero – Just One Reason 	Saw	18	43	86	18	69	1.4
		Did Not See	18	46	86	18	861	
	Slow Down and Move Over 	Saw	18	36	86	15	40	4.3
		Did Not See	18	46	86	18	890	
	Rules of the Roundabout 	Saw	18	40	86	16	188	5.5
		Did Not See	18	47	86	18	742	
	Gratitude Video 	Saw	18	40	86	17	57	2.8
		Did Not See	18	46	86	18	873	
	At least one screen capture was recalled	Yes	18	40	86	16	226	5.5
		No	18	47	86	18	706	
5	Buckle Up –	Saw	18	44	79	18	53	1.1

Video		Minimum	Average	Maximum	Std Dev	n	Z
Enough Reasons 	Did Not See	18	47	90	17	639	
Work Zone Safety – the Signs 	Saw	18	44	79	17	122	2.1
	Did Not See	18	47	90	17	570	
Flashing Yellow Light 	Saw	18	43	75	16	72	1.7
	Did Not See	18	47	90	17	620	
Slow Down for the Curve 	Saw	18	44	79	16	94	1.5
	Did Not See	18	47	90	18	598	
At least one screen capture was recalled	Yes	18	44	79	17	178	2.8
	No	18	48	90	18	514	

4.4.3.5 Presence of Children in a Household

This section presents the results of determining if there is a statistically significant difference regarding whether or not survey respondents with children in their household reported a screen capture of a video as compared with survey respondents without children in their household reported a screen capture of a video. First, the Z statistics at the 95% confidence level are presented for the first video sequence followed by those of the second video sequence (Table 25).





Table 25: Comparing Recall of Screen Captures in First Video Sequence for Households with and without Children.

Screen Capture	Measure	Households with children	Households without children
Vision Zero – Just One Reason 	n	216	722
	Reported recalling the video when prompted with the screen capture	19	38
	Z (95%)	1.9	
Slow Down and Move Over 	n	216	722
	Reported recalling the video when prompted with the screen capture	21	49
	Z (95%)	1.4	
Rules of the Roundabout 	n	216	722
	Reported recalling the video when prompted with the screen capture	65	124
	Z (95%)	4.2	
Gratitude Video 	n	216	722
	Reported recalling the video when prompted with the screen capture	13	27
	Z (95%)	1.5	

The results suggest that the only difference that exists is for the roundabout video, where those with children report recalling the video when presented with the screen capture more than survey respondents who did not report having children in their household. However, as noted earlier, with such small sample sizes, there is the potential that other differences exist for the screen captures that cannot be uncovered as a result of these small sample sizes.

The same analysis was conducted for the second video sequence (Table 26).

Table 26: Comparing Recall of Screen Captures in Second Video Sequence for Households with and without Children.

Screen Capture	Measure	Households with children	Households without children
Buckle Up – Enough Reasons 	n	184	511
	Reported recalling the video when prompted with the screen capture	15	38
	Z (95%)	0.31	
Work Zone Safety – the Signs 	n	184	511
	Reported recalling the video when prompted with the screen capture	39	83
	Z (95%)	1.5	
Flashing Yellow Light 	n	184	511
	Reported recalling the video when prompted with the screen capture	26	46
	Z (95%)	2.0	
Slow Down for the Curve 	n	184	511
	Reported recalling the video when prompted with the screen capture	33	61
	Z (95%)	2.0	

The limited sample size must again be acknowledged. However, here, there is a suggestion that the “Flashing Yellow Light” and “Slow Down for the Curve” screen captures resonated more with survey respondents who reported children in their households when compared to those households without children. This result is somewhat unexpected, as the primary protagonists in the “Buckle Up – Enough Reasons” was what one may assume to be a father and his little girl. Consequently, the researchers had anticipated that there would be a difference in recall for those with children in the household as compared with those without children in the household. The data suggest that this is not the case.

4.4.4 Slogan Recall

Ten slogans were presented in the intercept surveys across the two video sequences:

1. Slow down and move over.
2. Never Drink and Drive.
3. What's your one reason?
4. Don't Crowd the Plow
5. Slow down, look around, be ready to yield.
6. Check for trains
7. SAM I AM
8. The right seat
9. Slow down for the curve
10. Stop speeding before it stops you.

This section first looks at if any of the slogans may resonate with subgroups within Montana by looking for patterns by data collection location (i.e., Helena CTO versus Bozeman MVD) for each video sequence. It then investigates if there is a potential correlation between longer reported wait times and a greater retention of the number of slogans. Next, it examines if gender influences whether each slogan is recalled, followed by the influence of age. Finally, the presence of children in a household is investigated for influence of slogan recall.

4.4.4.1 Data Collection Location

Each slogan is investigated to determine if there is a difference in slogan recall between data collection locations. The following figures report the number of times a slogan was reported as recalled for the first (Figure 30) and second (Figure 31) video sequences by data collection location.

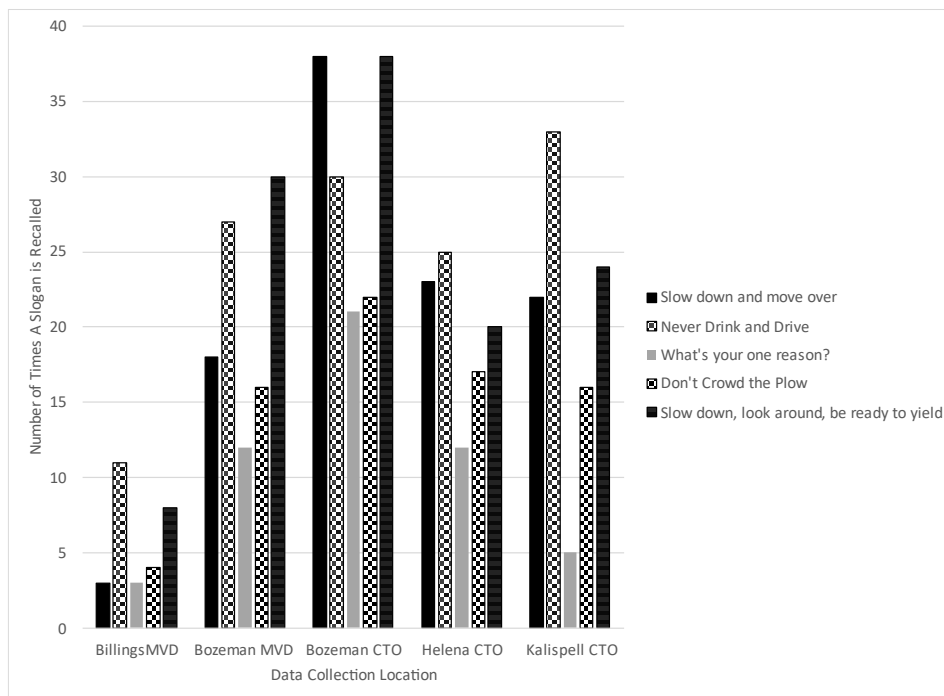


Figure 30: Number of Times a Slogan was Recalled for the First Video Sequence by Data Collection Location.

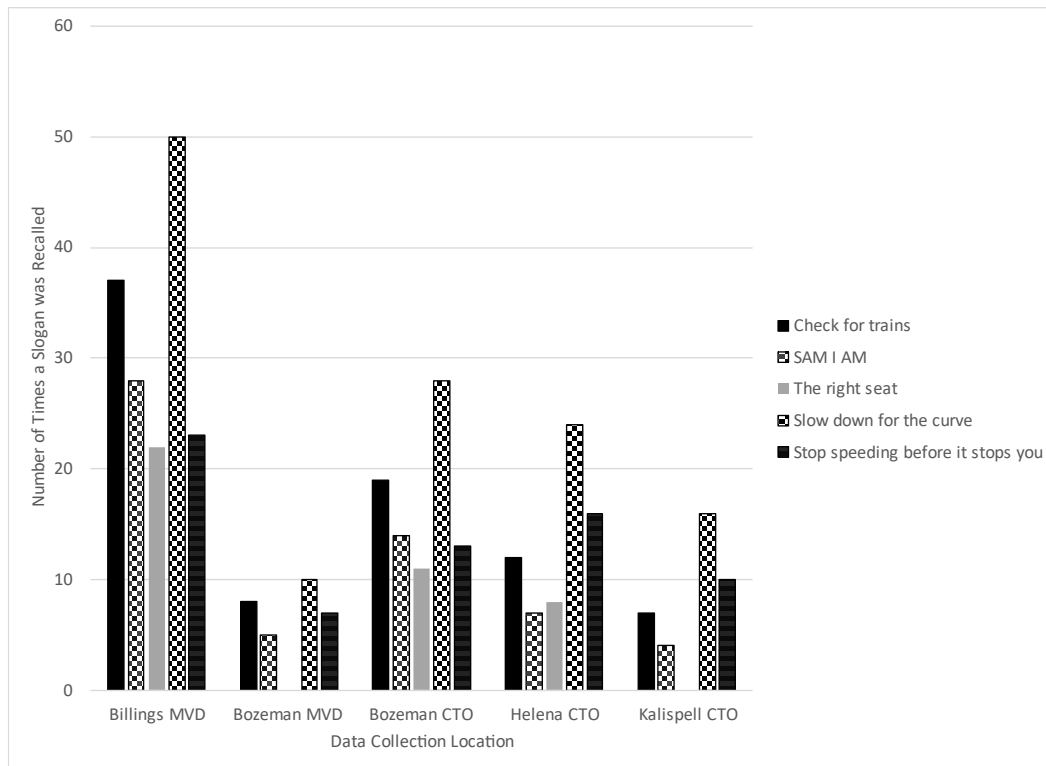


Figure 31: Number of Times a Slogan was Recalled for the Second Video Sequence by Data Collection Location.

For the first video sequence, “What’s your one reason?” was consistently reported the least across all locations. This would suggest that this slogan does not resonate when considering what people recalled from the video sequences. “Don’t Crowd the Plow” was the second least reported slogan, except at the Billings MVD. Hence, similarly, it does not seem this slogan resonates with viewers. Overall, three slogans were reported most frequently for the first video sequence: “Slow down and move over,” “Never Drink and Drive,” and “Slow down, look around, be ready to yield.” The researchers are aware of messaging related to “Don’t Crowd the Plow” on dynamic message signs (DMSs) and in public service announcements (PSAs) on the radio. Hence, these results may suggest that survey respondents are reporting their recall specific to the video sequences, as instructed, if the PSAs on the radio and messaging on the DMSs have been observed by the public. No statistical comparisons for data collection location were made, as the sample sizes were small in some instances (i.e., only three intercept survey respondents reported recalling the slogan “Slow Down and Move Over”).

The Billings MVD had the fewest number of recalled slogans during the first video sequence, when the TV was in a less optimal location. In contrast, the Billings MVD has the greatest number when considering all locations. The change in the number of reported recalled slogans between the first and second video sequences suggests that survey respondents are, in fact, reporting what they viewed from the traffic safety messages, and not just general slogans that they may have heard from other sources (i.e., radio, TV, billboards).

During the second video sequence, the “Slow Down for the Curve” slogan had the greatest number of survey respondents reporting that they viewed it (Billings MVD = 50; Bozeman MVD = 10; Bozeman CTO = 28; Helena CTO = 24; Kalispell MVD = 16; and Total = 128). Consequently, the researchers investigated if there were any statistically significant differences when considering the

location where the data was collected (Table 27).

Table 27: Z Statistic for “Slow Down for the Curve,” by Data Collection Location.

	Billings MVD	Bozeman MVD	Bozeman CTO	Helena CTO	Kalispell MVD
Billings MVD	-	7.5	3.8	1.5	5.2
Bozeman MVD	-	-	-3.8	-6.6	-2.0
Bozeman CTO	-	-	-	-1.8	1.7
Helena CTO	-	-	-	-	3.3

The results suggest similarities between Billings MVD and Helena CTO.

4.4.4.2 Reported Wait Time

Next, the researchers wanted to better understand if the reported wait time influenced if they reported recalling at least one slogan. Consequently, by video sequence, the researchers investigated the relationship between recall of at least one slogan and the reported wait time.

The majority of intercept survey respondents that reported recalling at least one slogan reported their wait time to be between 15 and 30 minutes; however, from a rate perspective (i.e., recall of at least one slogan as compared with the number of intercept survey respondents reporting the wait time), those that waited the longest had the greatest proportion (i.e., 0.32 in Table 28). The rates of the number of people recalling at least one slogan based on their reported wait time increased as the reported wait time increased. Overall, 175 intercept survey respondents reported recalling at least one slogan from a video during the first video sequence.

Table 28: Recall of at Least One Slogan by Reported Wait Time, First Video Sequence.

	Less than 15 minutes	15-30 minutes	31-45 minutes	46-60 minutes	More than 60 minutes
Number of observations, n	262	346	128	87	98
Recalled at least one slogan	35	60	29	20	31
Proportion of visitors who recalled at least one slogan for the first video sequence	0.13	0.17	0.23	0.23	0.32

The data was analyzed to identify if the reported wait time categories had similar proportions of respondents recalling at least one slogan. The results would suggest that slogan recall was impacted by reported wait time during the first video sequence (Table 29). The results suggest that the five categories potentially break down into the following three categories: less than 15 minutes; 15-60 minutes; more than 60 minutes.

Table 29: Z Statistic for Reported Wait Time & Recalling at Least One Slogan for the First Video Sequence.

	Less than 15 minutes	15-30 minutes	31-45 minutes	46-60 minutes	More than 60 minutes
Less than 15 minutes	-	-1.3	-2.3	-2.1	-4.0
15-30 minutes	-	-	-1.3	-1.4	-3.1
31-45 minutes	-	-	-	-0.057	-1.5
46-60 minutes	-	-	-	-	-1.3

The same analysis was conducted for the second video sequence. The overall sample size was larger, with 193 intercept survey respondents reporting recalling at least one slogan (Table 30).

Table 30: Recall of at Least One Slogan by Reported Wait Time, Second Video Sequence

	Less than 15 minutes	15-30 minutes	31-45 minutes	46-60 minutes	More than 60 minutes
Number of observations, n	184	257	134	70	39
Recalled at least one slogan	30	68	51	29	15
Proportion of visitors who recalled at least one slogan for the second video sequence	0.16	0.26	0.38	0.41	0.38

The categories for the second video sequence were somewhat different: 1) less than 15 minutes, 2) 15-30 minutes, and 3) more than 30 minutes (Table 31).

Table 31: Z Statistic for Reported Wait Time & Recalling at Least One Slogan for the Second Video Sequence.

	Less than 15 minutes	15-30 minutes	31-45 minutes	46-60 minutes	More than 60 minutes
Less than 15 minutes	-	-2.5	-4.4	-4.2	-3.1
15-30 minutes	-	-	-2.4	-3.1	-1.6
31-45 minutes	-	-	-	-0.47	-0.045
46-60 minutes	-	-	-	-	0.30

Similar to the conclusions noted in section 4.4.3.2 Screen Capture Recall, a survey respondent was more likely to recall at least one slogan if they reported a longer wait time. Therefore, if changes were made at the facilities which would significantly and consistently reduce the wait time, the effectiveness of displaying traffic safety information on TVs can expect to diminish.

4.4.4.3 Gender

The researchers wanted to understand: Is there a statistically significant difference (at the 95% confidence level) when comparing if more males than females reported recalling a slogan for each video sequence? There were several cases where a survey respondent reported recalling a slogan even though they did not report having viewed the TV. Therefore, only those survey respondents that reported seeing a TV are included in this analysis.

First, the researchers investigated if there were differences for the slogans used for the first video sequence (Table 32).

Table 32: Z Statistic for Male versus Female Slogan Recall, First Video Sequence.

	Male	Female	Non-Binary	Total	Z
n	504	425	3	932	-
Slow down and move over	56	47	0	103	0.025
Never Drink and Drive.	77	47	0	124	1.9
What's your one reason?	20	32	0	52	-2.4
Don't Crowd the Plow	42	31	0	73	0.59
Slow down, look around, be ready to yield.	64	55	0	119	-0.11
Recalled at least one slogan	101	73	0	174	1.1

Overall, the sample sizes for a slogan that was reported as recalled is small, particularly for “What’s your one reason?” and “Don’t Crowd the Plow”. However, of the collected data, there seems to be a significant difference when comparing males with females for the slogan, “What’s your one reason?”. This result is somewhat unexpected, as the focus of the video from which this slogan are males. Consequently, it may suggest that the difference is more reflective of the limited data available for this slogan (the fewest number of survey respondents reported recalling this one). More data would be needed to draw a more definitive conclusion. To try to more fully aggregate the information, the data from the first video sequence was then analyzed to better understand if males as compared with females had a difference regarding if one group recalled at least one slogan when compared with the other. With $Z = 1.1$, there was no statistically significant difference when comparing male versus female recall of at least one slogan.

This entire process was repeated for the second video sequence (Table 33).

Table 33: Z Statistic for Male versus Female Slogan Recall, Second Video Sequence.

	Male	Female	Non-Binary	Total	Z
n	403	288	3	694	-
Check for trains	41	41	1	83	-1.6
SAM I AM	28	29	1	58	-1.5
The right seat	20	21	0	41	-1.3
Slow down for the curve	69	56	2	127	-0.78
Stop speeding before it stops you	30	37	1	68	-2.4
Recall at least one slogan	104	87	2	193	-1.3

Overall, except the slogan “Slow down for the curve,” the majority of times each slogan was reported as being recalled is small (less than 100). However, there is a suggested difference

between males versus females reported recalling “Stop speeding before it stops you.” Since the crash statistics suggest that males are involved in more fatal speeding crashes, this result is not surprising (National Highway Traffic Safety Administration, 2022). It may indicate that this slogan is not as effective at reaching the male audience. To try to more fully aggregate the information, the data from the second video sequence was then analyzed to better understand if there was a difference in reporting of one slogan recall between males and females. With $Z = -1.3$, there was no statistically significant difference when comparing male versus female recall of at least one slogan.

With the available data, only two slogans were suggested to show some statistically significant difference when comparing males with females: “What’s your one reason?” and “Stop speeding before it stops you.” However, it should be highlighted once more the limited data was used to draw these conclusions.

4.4.4.4 Age

The researchers were interested in determining if a statistically significant difference (at the 95% confidence level) existed when comparing the average age of survey respondents who recalled each slogan with the average age of those that did not. In addition, the researchers were interested in understanding if there was a statistically significant difference in the average age of survey respondents who recalled at least one slogan during each video sequence. The results suggest that three of the five slogans (“Never Drink and Drive,” “What’s your one reason?” and “Slow down, look around, be ready to yield”) were typically reported as recalled by a younger average age of intercept survey respondents (Table 34). In addition, it was only in the first video sequence that younger intercept survey respondents were found to have a statistically significant difference regarding if they reported recalling at least one slogan. In contrast, no slogan was found to have a statistically significant difference when comparing the average age of those who reported recalling them for the second video sequence. In addition, there was no statistically significant difference in the average age when comparing those that reported recalling at least one slogan. However, again, the difference between the averages is a maximum of nine years (for “What’s your one reason?”), and the standard deviations are larger than this difference (typically about 18 years).

Table 34: The Influence of Average Age in Recall of Each and At Least One Slogan.

	Video		Minimum	Average	Maximum	Std Dev	n	Z
First Video Sequence	Slow down and move over.	Recalled	18	46	84	18	103	0.030
		Did Not	18	46	86	18	827	
	Never Drink and Drive.	Recalled	18	41	86	18	125	2.8
		Did Not	18	46	86	18	805	
	What’s your one reason?	Recalled	18	37	72	16	52	4.0
		Did Not	18	46	86	18	878	
	Don’t Crowd the Flow	Recalled	20	47	86	18	74	-0.83
		Did Not	18	46	86	18	856	

	Video		Minimum	Average	Maximum	Std Dev	n	Z
	Slow down, look around, be ready to yield.	Recalled	18	40	78	17	119	3.5
		Did Not	18	46	86	18	810	
	Recalled at least one slogan	Yes	18	42	86	18	175	3.0
		No	18	46	86	18	757	
	Check for trains	Recalled	18	48	79	18	94	-0.83
		Did Not	18	46	90	18	598	
Second Video Sequence	SAM I AM	Recalled	19	47	85	18	58	-0.34
		Did Not	18	46	90	17	634	
	The right seat	Recalled	20	50	74	16	41	-1.6
		Did Not	18	46	90	17	651	
	Slow down for the curve	Recalled	18	46	85	17	128	0.72
		Did Not	18	47	90	18	564	
	Stop speeding before it stops you	Recalled	18	47	85	20	69	-0.20
		Did Not	18	46	90	17	623	
	Recalled at least one slogan	Yes	18	45	85	17	194	1.6
		No	18	47	90	17	498	

4.4.4.5 Presence of Children in a Household

This section presents the results of determining if there is a statistically significant difference (at the 95% confidence level) regarding whether survey respondents with children in their household reported recalling a slogan as compared with survey respondents without children in their household. First, the Z statistics are presented for the first video sequence (Table 35) followed by those of the second video sequence (Table 36).

Table 35: Comparing Recall of Slogans in First Video Sequence for Households with and without Children.

Slogan from the First Video Sequence	Measure	Households with children	Households without children
Slow down and move over.	n	216	721
	Reported recalling the slogan	29	75
	Z (95%)	1.2	
Never Drink and Drive	n	216	721
	Reported recalling the slogan	36	90
	Z (95%)	1.6	
What's your one reason?	n	216	721
	Reported recalling the slogan	11	42
	Z (95%)	-0.41	
Don't Crowd the Plow	n	216	721
	Reported recalling the slogan	23	52
	Z (95%)	1.6	
Slow down, look around, be ready to yield	n	216	721
	Reported recalling the slogan	39	81
	Z (95%)	2.6	
Recalled at least one slogan	n	216	721
	Reported recalling at least one slogan	50	126
	Z (95%)	1.9	

The results suggest that the only difference that exists is for the slogan, “Slow down, look around, be ready to yield”, where those with children report recalling the slogan more than survey respondents who did not report having children in their household. However, the sample sizes for households with children that reported recalling this slogan are small (i.e., 39). In addition, overall, there was not a statistically significant difference regarding whether a household with or without children reported recalling at least one slogan during the first video sequence.

For the second video sequence, when considering each slogan, there was not a statistically significant difference regarding if a household with or without children reported recalling each slogan. The limited sample size must again be acknowledged. However, there is a suggestion that households with children are more likely to recall slogans than those without children.

Table 36: Comparing Recall of Slogans in Second Video Sequence for Households with and without Children.

Slogan	Measure	Households with children	Households without children
Check for trains	n	184	511
	Reported recalling the slogan	27	56
	Z (95%)	1.3	
SAM I AM	n	184	511
	Reported recalling the slogan	19	39
	Z (95%)	1.1	
The right seat	n	184	511
	Reported recalling the slogan	12	29
	Z (95%)	0.42	
Slow down for the curve	n	184	511
	Reported recalling the slogan	41	87
	Z (95%)	1.6	
Stop speeding before it stops you	n	184	511
	Reported recalling the slogan	19	50
	Z (95%)	0.21	
Recalled at least one slogan	n	184	511
	Reported recalling at least one slogan	64	130
	Z (95%)	2.4	

4.4.5 Confusion

The researchers made every effort to ensure that the intercept survey was written clear and was presented in an easy to understand/interpret format. However, even though pilot surveying results were promising, a review of the data collected indicated that there was some confusion. This could be for a multitude of reasons, including, but not necessarily limited to survey respondents hurrying and consequently not reading the survey questions in their entirety.

A very important question that the intercept survey asked was, “Did you look at the TV monitor during your visit?” with a prompt for yes or no response. There were several instances where a survey respondent selected no but then they would circle a screen capture or indicate that they had recalled a slogan. There is some potential that a small portion of the patrons considered the traffic safety videos to be just “videos” as compared with a TV monitor, suggesting a nomenclature difference. While at least each screen capture and slogan was chosen once, the vast majority of survey respondents who reported that they did not see the TV but reported recalling a screen capture or slogan reported “Never Drink and Drive.” Since this slogan has been used in traffic safety messaging for a period of time, it is possible they are reporting their awareness of the message as compared with recalling it from the traffic safety videos.

4.4.6 Summary of Analysis of Intercept Survey Data

With respect to those who saw the TVs, they tended to be viewed by younger patrons and those who waited longer. Gender identity did not appear to have an impact on if a TV was seen.

With respect to recalling screen captures, those who waited longer were more likely to report recalling at least one screen capture. No gender identity differences were found, but age differences were observed. Younger patrons were more likely to report: “Slow Down and Move Over,” “Rules of the Roundabout,” the “Gratitude Video,” and “Work Zone Safety – the Signs.” For the “Slow Down and Move Over” and “Work Zone Safety – the Signs” videos, younger people may more closely see themselves or someone they love as potentially filling these positions.

The response to the “Rules of the Roundabout” video could potentially suggest that the younger patrons may be more open to these new traffic safety treatments, and therefore they were interested in learning more about how to navigate a roundabout. Since the “Gratitude Video” included a protagonist of both the younger and older generations, the result was a bit unexpected in that no difference in recall of the average age was found. When considering households with children, the screen captures for “Rules of the Roundabout,” “Flashing Yellow Light,” and “Slow Down for the Curve” were recalled more often when compared with households without children.

With respect to recalling slogans, similar to screen captures, the longer the reported wait time, the more likely it was that an intercept survey respondent would recall at least one slogan. One gender identity difference was found for slogans: “Stop speeding before it stops you” was more likely to be recalled by those identifying as female as compared with males. This result coincides with that of Islam et al. (Islam, Thue, & Grekul, 2017), where females were found to see more risk with speeding. This result may suggest that this slogan will not impact the traffic safety culture of males. During the first video sequence, age was also found to impact the recall of slogans, with younger patrons more likely to recall at least one slogan from the first video sequence. In addition, younger patrons were more likely to recall the following slogans: “Never Drink and Drive,” “What’s your one reason?” and “Slow down, look around, be ready to yield.” Age was not found to have impacted the recall of slogans from the second video sequence.

Overall, age generally slanted towards younger patrons as more likely to see and recall screen captures and slogans. While some of these results could be attributed to less recall as one ages, it may also suggest that certain traffic safety messages resonate less with someone older. To have a greater impact on traffic safety culture, MDT may want to consider tailoring some traffic safety messages to an older audience. However, as MDT’s CHSP has indicated, that for several years now, the statewide traffic fatalities and serious injuries for older Montanans has already been declining, having the traffic safety messages tailored so that they reach a younger audience, as was found for this research project, may be desirable and there is not a need to develop videos tailored to the older audience.

Ultimately, the video content and location of the TV determined audience attention. However, considering the videos and slogans within this experiment, those who waited longer and those who were younger had higher rates of seeing and reporting recall of information from the traffic safety videos during the intercept surveys. To ensure the information from any included videos is received, videos similar in length should be chosen. However, if MDT would prefer to bias traffic safety information disseminated to viewers, they could also lengthen a particular video, as this seemed to influence respondents’ recall when presented with a screen capture of the video.

Overall, videos that may be described as “shocking” (Silva, Laiz, & Tabak, 2020) or blended

entertainment (Yoh, Uchiyama, Hung, & Doi, 2019) seemed to resonate more with viewers. However, not all of the videos included in this research effort fit well with the three categories (shocking, punitive, technical) identified by Silva et al. (Silva, Laiz, & Tabak, 2020). Consequently, if MDT wants to capture the attention of viewers and ensure more effective messaging, videos that are shocking or those that engage a viewer's empathy with the protagonist should be selected.

As discussed in the design of the intercept survey and experiment, to ensure that the intercept surveys were succinct, consequently allowing for a greater participation rate, limited questions could be asked. Demographic information (i.e., age, gender) that was expected to impact recall of information was prioritized. In addition, questions targeting the main objective of the project (i.e., did you see the TV), were prioritized as well. Future studies like this could potentially leverage other incentives, such as monetary compensation, to enable participation with lengthier surveys that included questions about trivia. When asked what was most memorable about the videos, survey respondents reported recall of detailed trivia information such as the length a vehicle travels when one is texting.

While more intercept survey respondents indicated a willingness to participate in a follow-up survey, only those who indicated that they had viewed the TV were asked to complete one. The next section details the analysis of the follow-up surveys.

5 Follow-Up Surveys

A follow-up survey was created to obtain a richer understanding regarding what, if any, longer-term impact the traffic safety videos had on those that viewed them while in the motor vehicle division or county treasurer offices. APPENDIX B: Follow-up Surveys provides an example of the online and hard copy surveys administered to potential respondents. This section discusses the results of the collected follow-up surveys. First, the collected data is described. Then after, the sample is compared with the intercept survey data. Finally, results of additional analyses on the data are reported.

5.1 Description of Data

Table 37 shows the number of follow-up surveys and their percent of the entire sample for that data collection, subtotal or total.

Table 37: Number of follow-up surveys and percentage of sample for that data collection period, subtotal, or total.

	Data Collection Period	Billings MVD	Bozeman CTO	Bozeman MVD	Helena CTO	Kalispell MVD	TOTAL
First Video Sequence	Aug/Sept	0 (0%)	7 (47%)	2 (33%)	3 (33%)	1 (17%)	13
	Oct/Nov	0 (0%)	3 (25%)	5 (31%)	1 (13%)	3 (21%)	12
	Subtotal	0 (0%)	10 (40%)	7 (28%)	4 (16%)	4 (16%)	25
Second Video Sequence	Apr/May	8 (40%)	2 (10%)	1 (5%)	8 (40%)	1 (5%)	20
	Jun/Jul	6 (26%)	11 (48%)	2 (9%)	2 (9%)	2 (9%)	23
	Subtotal	14 (33%)	13 (30%)	3 (7%)	10 (23%)	3 (7%)	43
TOTAL		14 (21%)	23 (34%)	10 (15%)	14 (21%)	7 (10%)	68

Overall, the sample is small. However, the sample has some rich information when considering whether or not the traffic safety videos may have impacted traffic safety culture. APPENDIX B: Follow-up Surveys has tables that describe the number of completed follow-up surveys as compared with the number of intercept survey respondents who had indicated a willingness to participate in the follow-up surveys (and saw the TV), both online and via a mailed hard copy version, broken down by video sequence and data collection period within each video sequence. A notable change between video sequences is the greater completion of follow-up surveys during the second video sequence. In part, this reflects the greater number of customers who viewed the TV during the second video sequence, particularly at the Billings MVD location where the TV had been moved (see the zero for the Billings MVD for the first video sequence as compared with fourteen for the second video sequence in Table 37).

The majority of the follow-up surveys were representative of customers of the Bozeman CTO (Figure 32).

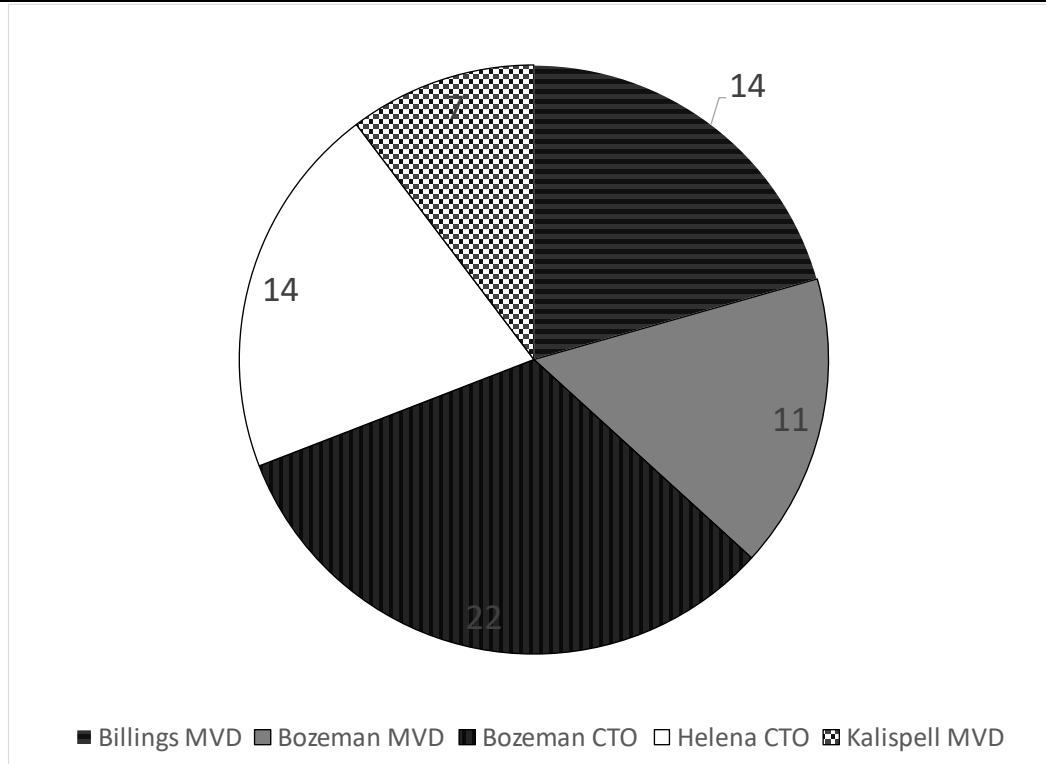


Figure 32: Follow-Up Survey Data Collection Location.

Overall, the majority of follow-up surveys were completed online (62 responses or 91%). By the time the survey respondent had completed the follow-up survey, eleven (16%) of survey respondents reported, “I do not recall any of these videos.” when presented with screen captures from them.

If a follow-up survey respondent reported that they had recalled the videos when presented with the screen captures, they were then asked if any of the following four statements apply:

- I learned something new.
- It made me think of my children.
- It made me think of my family members.
- It made me think of a time when I had a close call.

Of the forty-seven follow-up survey respondents who responded to this question, the majority chose: “It made me think of my family members.” (14 or 30%) and “It made me think of a time when I had a close call.” (14 or 30%).

Follow-up survey respondents were asked if they had shared the information from within the videos. Ten survey respondents (20%) who responded to this question indicated that they had. They reported sharing the following:

- “How to use a roundabout. There are so many people out there who stop and wait like at a stop sign. More public education is needed.”
- “Discussed roundabouts with my son.”
- “Round[]about info”
- “About how people do not know yield laws”
- “round[]about”
- “The carts running into each other at the grocery store.”

- “I discussed all of the information with my wife. We both agree that a large number of drivers need to adhere to the information provided in the videos. Too many people drive way to[o] fast for road conditions and do not have the courtesy for other drivers.”
- “Talked with my granddaughter about flashing yellow light.”
- “Slowing down in work zone”

The positive takeaway is that salient information is being shared. If the impact found for those who responded to the follow-up survey can be extrapolated to the entire sample, then there is a potential that around three hundred people of those who participated in the intercept surveys may have absorbed the traffic safety information provided by the videos. With an extensive range of customer ages (see Intercept Survey Data for more details on the intercept survey age distribution), the value of disseminating traffic safety messages in this relatively passive manner could hold value. For example, MDT’s Holiday Mobilization plan cost \$4,145 to disseminate local law enforcement messaging in the Bozeman area to an estimated 325-350 individuals; this may suggest that this effort holds of value of approximately \$4,000 based on its ability to disseminate traffic safety information.

When presented with the slogans and the statement, “I do not recall reading or seeing any of these slogans”, twenty (29%) of follow-up survey respondents indicated that they did not recall any of the slogans. When compared with the number of folks that reported not recalling any of the videos, it would appear as if recall of slogans is less likely than recall of the screen captures. This result is expected based on the literature (i.e., (Silva, Laiz, & Tabak, 2020)), where videos have been discussed as being more captivating than text.

Survey respondents were then asked if the same four statements (shown in the bullets above) apply with respect to the slogans. Thirty-two survey respondents provided a response. Again, the same two slogans (“It made me think of my family members.” (10 or 31%) and “It made me think of a time when I had a close call.” (11 or 34%)) were the most frequently selected statements.

Follow-up survey respondents were then asked if they had shared the slogans. Only two (5%) survey respondents reported having done so. One reported “Slow down for curves with my husband”. The other survey respondent did not provide specific information. Therefore, when compared with the screen captures, the results suggest more of an impact as a result of the screen captures when compared with slogans for the sharing of information. The impact of screen captures versus slogans may be somewhat biased, as questions about the screen captures were listed first in the survey with questions about the slogans presented later in the follow-up survey; the order of survey questions can have an impact on response.

The majority of survey respondents (69%) reported that the videos did not result in them changing their beliefs. (Note: Only 51 of the 68 total respondents provided a response to this question.) Thus, this result suggests a minimal impact to traffic safety culture, where a change in beliefs is associated with an impact in traffic safety culture.

Follow-up survey respondents seemed to suggest that they would be safer drivers more than they changed a driving behavior (Figure 33).

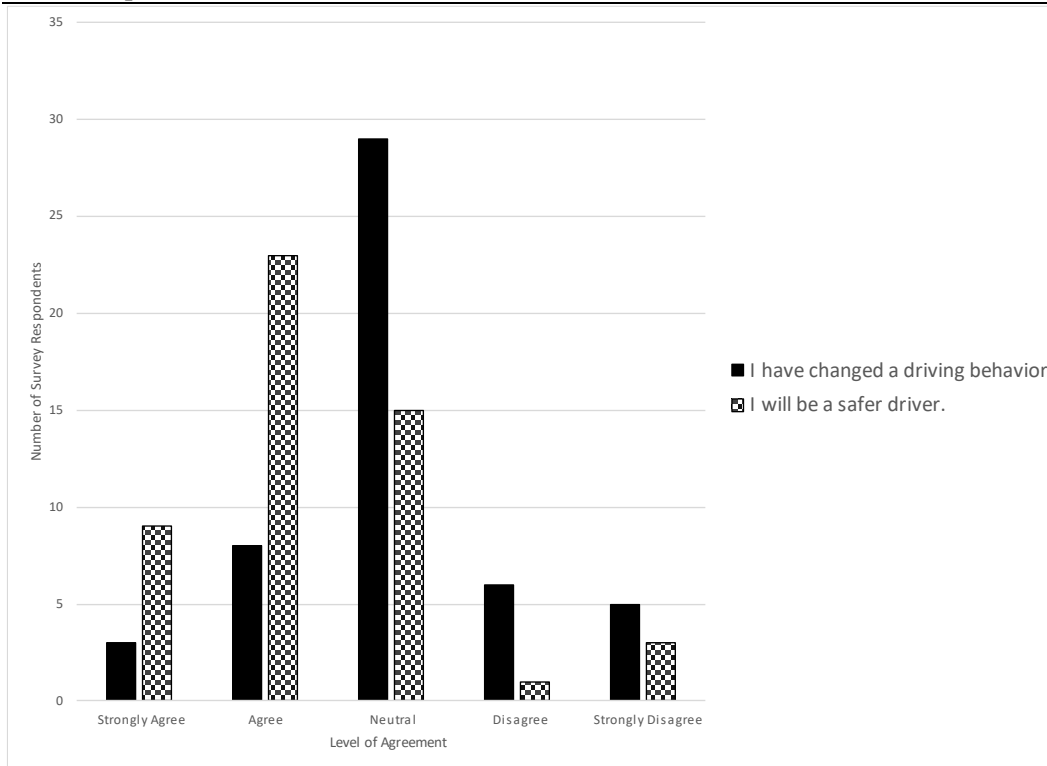


Figure 33: Reported change in driving behavior and driving safe.

Follow-up survey respondents had a minimum reported age of 19, average of 48 and maximum of 78 years of age. More survey respondents were female and male; no survey respondents that reported identifying as non-binary participated in the follow-up survey. Follow-up survey respondents lived in households ranging from one to four people, with an average of just under two people. The median was two. Twenty-six follow-up survey respondents (38% of the sample) were from households with children.

Based on a survey respondent's self-identification, the follow-up survey data is biased towards representing respondents identifying as White/Caucasian. Of those providing information about race, all but one survey respondent reported being White/Caucasian (91%); the only other reported race was Asian (1.5%). Comparing the results to the U.S. Census Bureau data for individuals identifying as one race for Montana (85.1%) (U.S. Census Bureau, 2020), the follow-up survey data has an overrepresentation of White/Caucasian. With no follow-up survey respondents indicating that they are American Indian and Alaska Native, individuals identifying as such may not well represented in the follow-up survey data. However, five follow-up survey respondents did not provide information about race. One individual reported identifying as Hispanic/Latino (1.5%). Therefore, from an ethnicity perspective, individuals identifying as Hispanic/Latino are underrepresented when compared with the U.S. Census for Montana (4.3%) (U.S. Census Bureau, 2020). Therefore, when considering Benzaman et al.'s (Benzaman, Ward, & Schell, 2022) findings, which suggest that race and ethnicity have an impact on traffic safety culture, with little variability in the data, the influence of race and ethnicity on responses cannot be considered.

Most follow-up survey respondents (37 respondents) reported holding a bachelor's degree or greater. (Note: Only 63 of the 68 total respondents provided a response to this question.) In addition, the majority of survey respondents (21 respondents) reported making more than \$100,000

annually. (Note: Only 56 of the 68 total respondents provided a response to this question.) The majority of follow-up survey respondents had reported spending between fifteen and forty-five minutes at a facility (Figure 35).

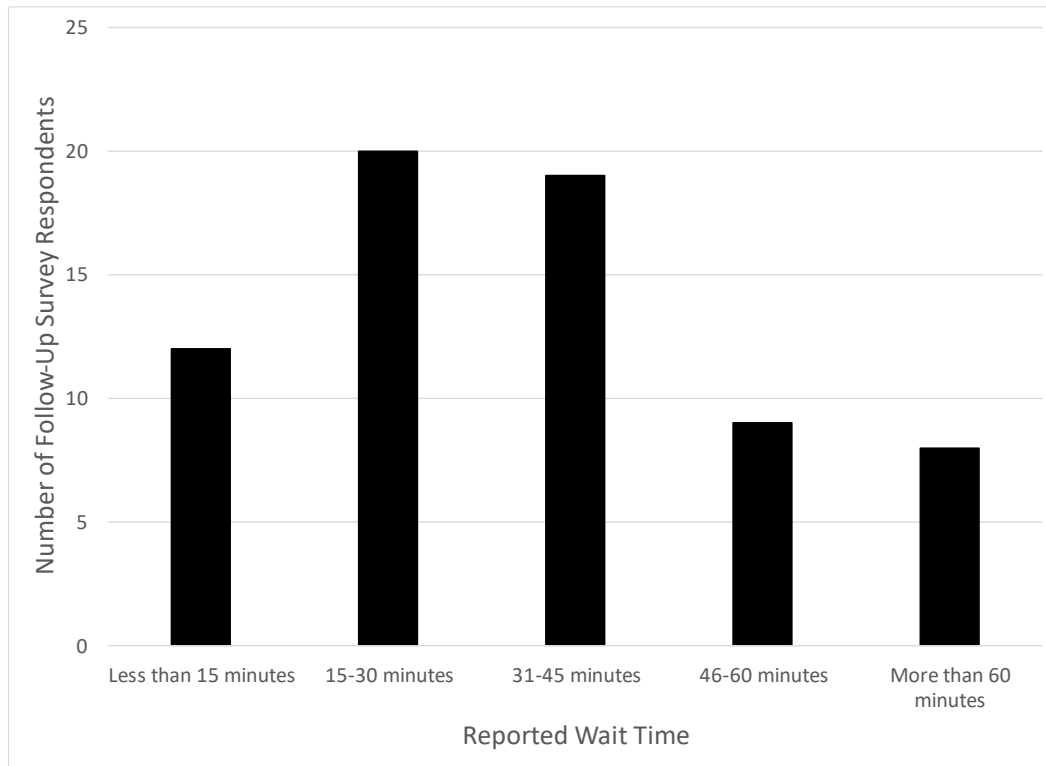


Figure 34: Reported Wait Time of Follow-Up Survey Respondents.

Follow-up survey respondents were asked if they had heard about the topics elsewhere. Most survey respondents did not provide a response. Nine said no. Another indicated that they had seen similar information on “roadside electric signs” (i.e., dynamic message signs). Three follow-up survey respondents reported that they had heard similar information on the TV/radio: “don’t crowd the plow”, Real ID, and texting were recalled as being disseminated via these forums. As discussed in MDT’s Media Plan, MDT does have on-going media campaigns in addition to this research effort. One person indicated that they had heard the work zone and child safety information on the radio. Two people reported reading information via a billboard: seatbelts and people dying from passing snowplows were the two reported topics. One person reported, “I was in for such a short time and my business was upstairs, so I really did not see any of these materials but I think it[’]s a great idea for those who spend time waiting.” Finally, one survey respondent indicated learning about such information via their employer: “At my place of work we have regular safety meetings with many about driving since we all have CDL’s and are in many different driving situations.”

The data suggests that the videos, not the slogans, are prompting survey respondents to share what they learned. At least one survey respondent’s nomenclature changed between the intercept and follow-up survey: a roundabout was described as a “traffic circle” in the intercept and a roundabout in the follow-up survey. In addition, the responses suggest that survey respondents are unconvinced regarding a roundabout’s ability to reduce severe crashes. There is a potential that survey respondents may be overlooking the benefit that roundabouts bring in terms of reducing severe crashes, even though they can result in an increase in less severe (i.e., property damage only) crashes.

It could also be a reflection that motorists do not see or experience the majority of the crashes that occur at intersections, so they do not truly understand the change. There may be a need to better tailor information to locations that are “local” to an area.

For both screen captures and slogans, “It made me think of a time I had a close call.” was one of the most frequently chosen statements (albeit by only a small number). What this suggests is that although crash frequency and severity data is available, there are more instances occurring on the roadways where crashes were avoided. It highlights the challenges associated with ensuring a safe roadway is greater than reported crashes suggest. Therefore, efforts such as this research project, which can assist with educating the public about more modern traffic engineering treatments (roundabouts, flashing yellow lights) or disseminating approaches that can reduce the number of crashes (moving over for first responders), can help to reduce errors made by drivers which have been found to lead to crash occurrence.

5.2 Comparing Intercept & Follow-Up Survey Data

This section discusses how the subsample of those completing the follow-up surveys compares to the intercept survey sample from which it originated. Percentage of children in the household, age, gender, the reported number of screen captures and slogans reported in the follow-up survey as compared with the intercept survey and reported wait time are all compared.

With thirty-eight percent of follow-up survey respondents reporting that they had children in their household, compared with twenty-five percent reported in the intercept survey respondent sample, a larger proportion of follow-up survey respondents were from survey respondents living in households with children.

The researchers then considered how the samples compared from the viewpoint of ages and gender. All results were compared with the 95% confidence interval ($Z=1.96$). While the average age of follow-up survey respondents is slightly older, the average age was not found to be statistically significantly different (Table 38). Similarly, the proportion of males to females when comparing the intercept to the follow-up surveys were not found to be statistically significantly different (Table 39), a larger proportion of males responded to the intercept survey as compared with the follow-up surveys. (Note: Only the proportion of males and females were compared, as no intercept survey respondents identifying as non-binary participated in the follow-up survey.)

Table 38: Comparing the ages of intercept and follow-up survey participants.

Statistic	Intercept	Follow-Up
n	1,625	68
Minimum	18	19
Average	46.0	48.1
Maximum	90	78
Standard Deviation	17.8	16.1
Z	-1.03	

Table 39: Comparing the gender of intercept and follow-up survey participants.

Statistic	Intercept	Follow-Up
n	1,632	68
Male	907	31
p _{male}	0.556	0.456
Z _{male}	1.62	
n	1,632	68
Female	713	37
p _{female}	0.437	0.544
Z _{female}	-1.74	

Not everyone reported recalling the same number or fewer screen captures when comparing the intercept with the follow-up survey data as would be expected. Of the sixty follow-up survey respondents who answered this question, fifteen (25%) reported recalling fewer, eighteen (30%) reported the same amount and twenty-seven (45%) reported recalling more screen captures in the follow-up survey as compared with the intercept survey. One possible explanation for this is that the intercept survey served, to some degree and in some cases, as a tool to enable intercept survey respondents to recall the screen captures. In addition, while the follow-up survey data sample was slightly overrepresented by females, those who reported recalling more was slightly overrepresented by males (15 of 27 or 56%). For those survey respondents who reported recalling more screen captures in the follow-up survey when compared with the intercept survey, the average time between the two surveys was slightly above the average (93 days versus 80 for the first video sequence; 23 days versus 22 for the second video sequence). For the first video sequence, the screen capture from the “Slow Down and Move Over” video was the most frequently reported screen capture being recalled during the follow-up survey that was not reported as being recalled during the intercept survey (seven of nine). [The screen capture for “Rules of the Roundabout” was reported by three; the screen capture for “Vision Zero – Just One Reason” was reported by four.] For the second video sequence, there was no bias regarding which screen capture was recalled when comparing that reported in the intercept survey with the follow-up survey (“Buckle Up – Enough Reasons” = five; “Work Zone Safety – the Signs” = six; “Flashing Yellow Light” = six; and “Slow Down for the Curve” = five).

While the general distribution was similar when comparing the time spent waiting at facilities for intercept with follow-up survey respondents, those who completed the follow-up surveys had spent a slightly longer time at the facilities (Figure 35).

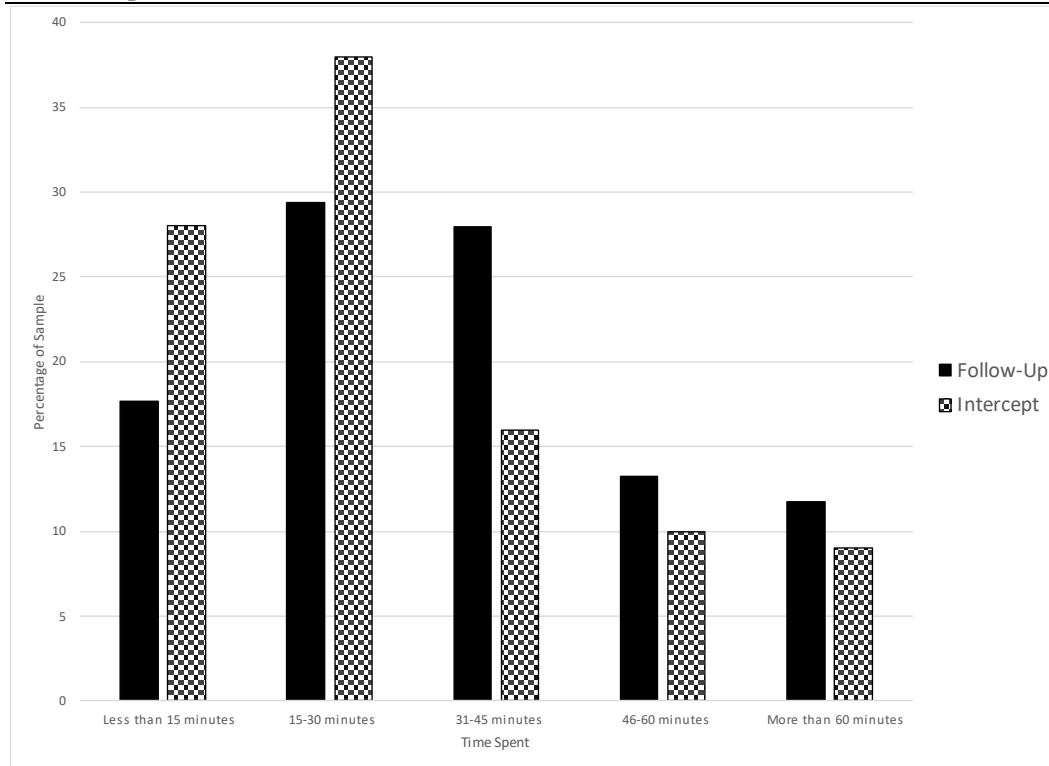


Figure 35: Reported Wait Time: Intercept vs. Follow-Up Survey Sample.

Therefore, the results of the follow-up survey have a bias towards survey respondents who spent a longer timeframe at the facilities and may have generally viewed the videos and absorbed the content for a more extended timeframe.

5.3 Analyses of Follow-Up Survey Data

Now that the follow-up survey data has been summarized and compared to the overall intercept survey data, this section discusses statistical analyses of the follow-up survey data. First, the researchers looked at if age and gender influence the method in which someone was willing to participate in a follow-up survey. Next, the researchers looked at how gender, age, and the time between when the intercept and follow-up surveys were taken and its impact on recall of screen captures. Finally, the researchers investigated if there was an influence of whether or not beliefs were reported as being changed based on one's gender.

5.3.1 Influences of Follow-Up Methods: Age and Gender

First, the researchers wanted to consider if there was a statistically significant difference when comparing the average age of those who responded online as compared with hard copies of the follow-up surveys (Table 40). No statistically significant difference was found. Again, with limited data (i.e., only six hard copy surveys), the result is most likely reflective of this small sample size.

Table 40: Comparing the age of those participating online versus via hard copy.

Statistic	Online	Hard Copy
Minimum	19	29
Average	48.2	47.3
Maximum	78	67
Standard Deviation	16.3	15.5
n	62	6
Z	0.124	

Next, the researchers wanted to understand if the surveying method (online as compared with hard copy) influenced participation based on gender. However, due to the small sample size (two of thirty-one males; four of thirty-seven females), it does not make sense to compare the statistics of online versus hard copy participation by gender.

5.3.2 Influences of Number of Recalled Screen Captures: Age, Gender, and Length of Time

Next the researchers wanted to better understand if the number of screen captures that were reported as being recalled for the follow-up survey were fewer based on the time between the two surveys, and if there were differences in the level of recall based on age and gender.

The results suggest a depreciating benefit purely from a recall perspective (Figure 36).

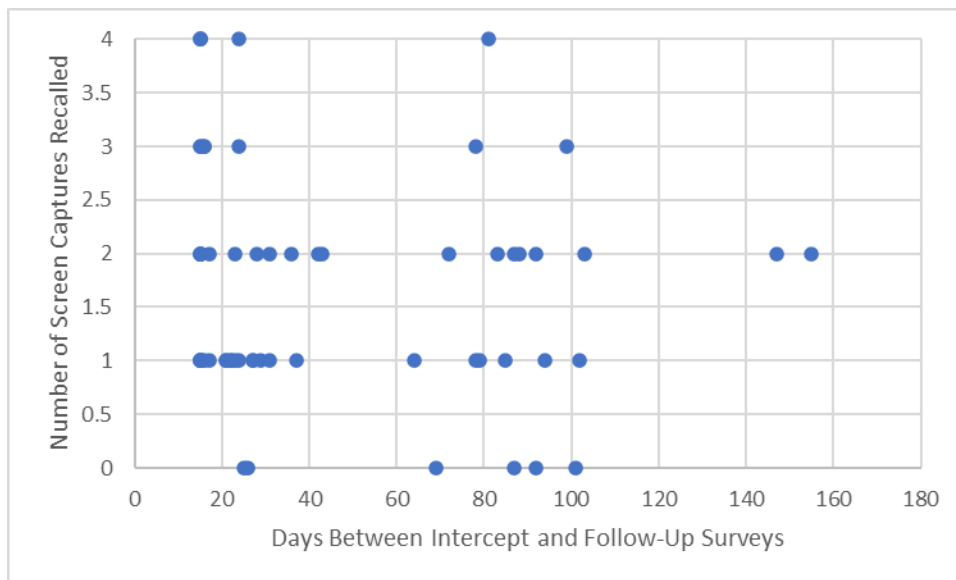


Figure 36: Days between intercept and follow-up surveys as compared with screen capture recall.

However, if there were a linear association between more days and a reduced recall, more survey respondents who reported recalling zero screen captures should be captured further to the right in the x-axis. Hence, overall, it seems to be a weak relationship and suggests that there are factors beyond just time to consider.

When comparing the difference between the number of recalled screen captures during the intercept and follow-up surveys with the days between intercept and follow-up surveys, it appears that some survey respondents either did not accurately recall what they had seen or they recalled some of the screen captures from the intercept survey (Figure 37). This is reflected by the negative values for the difference (i.e., recalled screen captures during intercept survey minus the recalled screen captures during follow-up survey). When the negative results are removed, the results shows that as time progressed, fewer screen captures were recalled.

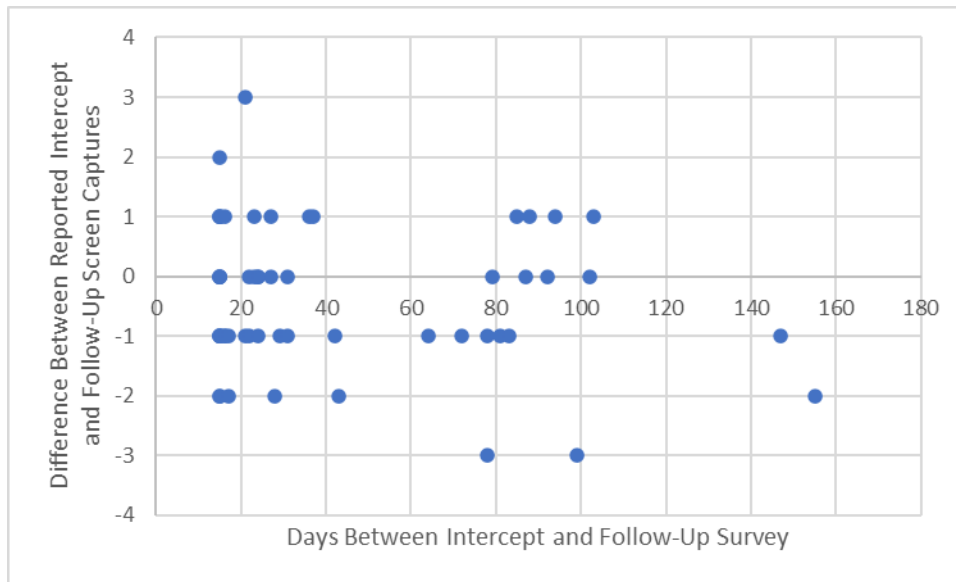


Figure 37: Difference in intercept and follow-up survey screen capture recall as compared with days between surveys.

The researchers then considered how age may relate to the number of screen captures recalled. While Figure 38 shows that the majority of follow-up survey respondents reported recalling one or two screen captures, there does seem to be a slight slant toward younger survey respondents reporting recalling more (four) and the older survey respondents reporting the same or less (one). However, one of the older survey respondents also reported three. So, while some influence of screen captures recall may relate to age, there are clearly other factors that influence how many screen captures one recalls.

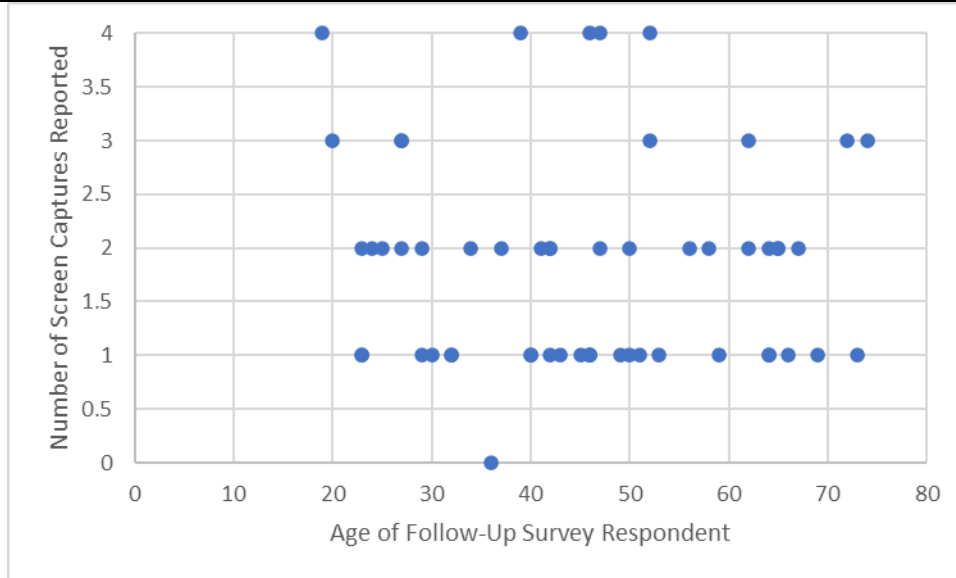


Figure 38: Number of screen captures recalled during the follow-up survey as compared with survey respondent's age.

The researchers then compared whether or not males or females recalled more, the same, or fewer screen captures based on the average number recalled. With $Z = -0.18$, no statistically significant difference was found (Table 41).

Table 41: Comparing the average of screen captures recalled by males and females.

Statistic	Males	Females
Minimum	0	1
Average	1.81	1.86
Maximum	4	4
Standard Deviation	1.08	0.92
n	27	29
Z	-0.18	

5.3.3 Safety Messaging Influences on Beliefs: Gender, Age, and Data Collection Location

Next the researchers wanted to better understand if gender, age, and data collection location influenced whether or not they selected the statement, “The videos did not change my beliefs.” Overall, the number of survey respondents providing information for this question was limited ($n = 52$).

Of those responding to this question who indicated either what belief may have changed or identifying if their beliefs had not changed, there appears to be no difference with respect to age (Table 42).

Table 42: Comparing the age of those reporting a change in beliefs with those who did not report a change.

Statistic	Beliefs were unchanged	A change in at least one belief was reported
Minimum	19	25
Average	46.3	46.4
Maximum	74	73
Standard Deviation	16.6	14.3
n	35	17
Z	-0.021	

More males reported that the videos did not change their beliefs even while the sample size (i.e., 24 versus 28) was smaller (Table 43). However, from a statistical perspective, there does not appear to be a difference at the 95% confidence level. One may expect that if a larger sample size could be achieved, a difference would become statistically significant.

Table 43: Comparing the gender of those reporting a change in beliefs with those who did not report a change.

Statistic	Male	Female
n	24	28
Reported that, “The videos did not change my beliefs.”	19	16
p	0.79	0.57
Z	1.69	

The researchers then wanted to understand if a specific data collection location may have had an influence regarding whether or not a follow-up survey respondent reported a change in their beliefs. While the sample size was small when divided out by data collection location, of the available data, at every location, the results averaged around 35% of survey respondents having reported a change in their beliefs. Hence, data collection location, which may serve as a proxy for traffic safety culture differences, does not seem to have an impact (based on the available data) regarding whether or not the videos were reported as changed one’s beliefs.

Table 44: Comparing the data location of those reporting a change in beliefs with those who did not report a change.

	Billings MVD	Bozeman MVD	Bozeman CTO	Helena CTO	Kalispell MVD	Subtotal
A change was reported.	4 (33%)	2 (22%)	6 (32%)	3 (38%)	2 (50%)	17
Reported that, “The videos did not change my beliefs.”	8	7	13	5	2	35
Total	12	9	19	8	4	52

5.3.4 Influence of Safety Messaging on Behavior: Gender, Age, and Data Collection Location

Next the researchers wanted to better understand if gender, age, and data collection location influenced whether or not a survey respondent reported either Strongly Agree or Agree when presented with the statement, “I have changed a driving behavior.”

The researchers began considering the influence of age by looking at all categories separately. However, with the Strongly Agree and Strongly Disagree categories composed of three and five survey respondents, respectively, these categories were grouped with the next interior category (i.e., Strongly Agree and Agree). From this analysis perspective, younger survey respondents were less likely to have reported changing a driver behavior as a result of the traffic safety videos (Table 45).

Table 45: Comparing ages of reporting of a driving behavior change.

Statistic	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Minimum	25	30	19	23	23
Average	36.67	57.38	45.90	47.17	36.00
Median	34	63	46	46	27
Maximum	51	69	74	67	59
Standard Deviation	13.20	12.67	16.17	14.93	16.16
n	3	8	29	6	5
Minimum	25		19	23	
Average	51.73		45.90	42.09	
Median	56		46	46	
Maximum	69		74	67	
Standard Deviation	15.52		16.17	15.81	
n	11		29	11	

Therefore, while younger survey respondents may recall more screen captures (intercept survey), these results suggest that changes in driving behavior may be less impactful for younger customers. This may suggest that while younger customers are receiving the information, a discussed in Islam et al. (Islam, Thue, & Grekul, 2017), older customers may be more receptive to the information if it is received.

When considering gender, the most notable difference is for the “Strongly Agree” category, which was not chosen by any male follow-up survey respondent (Figure 39). Overall, were more likely to report a “Neutral” level of agreement, with females generally reporting more agreement towards indicating that they had made a behavior change. Again, this result which suggests a difference in response between males and females, seems to coincide with findings from Islam et al. (Islam, Thue, & Grekul, 2017).

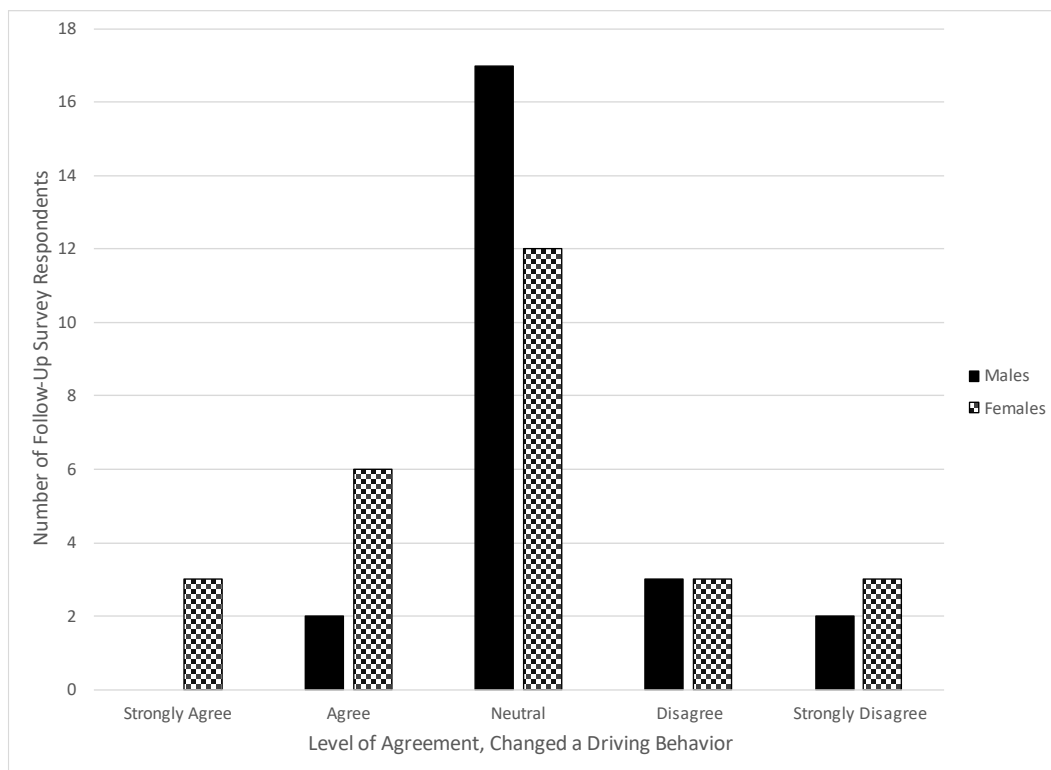


Figure 39: Level of agreement with changing a driving behavior: males versus females.

This section considers follow-up survey respondent’s level of agreement regarding whether or not they made a change to their driving behavior. Because there are five categories of agreement and five data collection locations, the subdivided data means that there are limited numbers for each subcategory. Many follow-up survey respondents report a “Neutral” level of agreement; however, the results seem to suggest that customers of the two Bozeman facilities tend to disagree that their behaviors were changed (Figure 40). In contrast, the other locations (Billings MVD, Helena CTO, and Kalispell MVD) seem to be slightly more positive. This may suggest a variation in traffic safety culture when considering the Bozeman area as compared with Billings, Helena, and Kalispell.

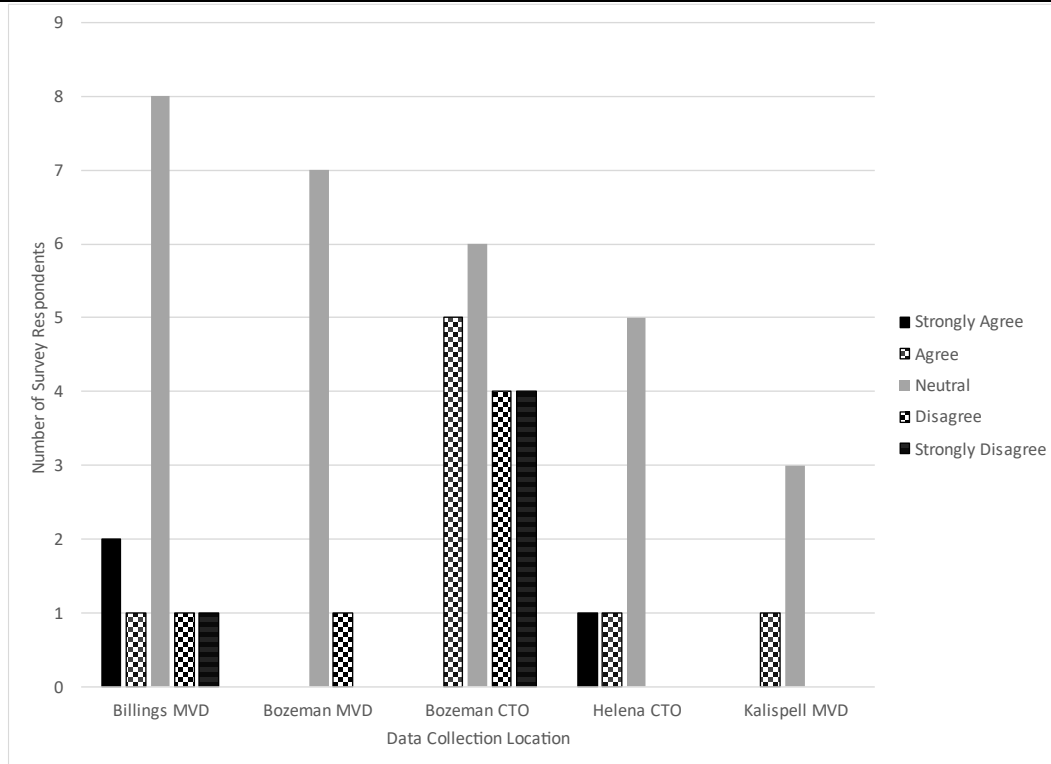


Figure 40: Level of agreement with changing a driving behavior: data collection location.

5.3.5 Influence of Traffic Safety Messaging on Safe Driving: Gender, Age, and Data Collection Location

Next the researchers wanted to better understand if gender, age, and data collection location influenced whether or not a survey respondent either Strongly Agree or Agree when presented with the statement, “I will be a safer driver.”

Considering age, based on those providing input, it would appear that older survey respondents tended to report being a safer driver as a result of viewing the traffic safety videos (Table 46).

Table 46: Comparing ages of being a safer driver.

Statistic	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Minimum	25	19	23	46	24
Average	53.33	46.96	41.80	46	43.33
Median	62	50	42	46	47
Maximum	74	72	64	46	59
Standard Deviation	19.83	17.30	10.71	-	17.79
n	9	23	15	1	3

Again, this result would seem to correlate with the findings of Islam et al. (Islam, Thue, & Grekul, 2017).

While follow-up survey respondent input to this statement was overall more positive, males as compared with females were more likely to report stronger levels of agreement (i.e., eight females “Strongly Agree” compared with one male) (Figure 41).

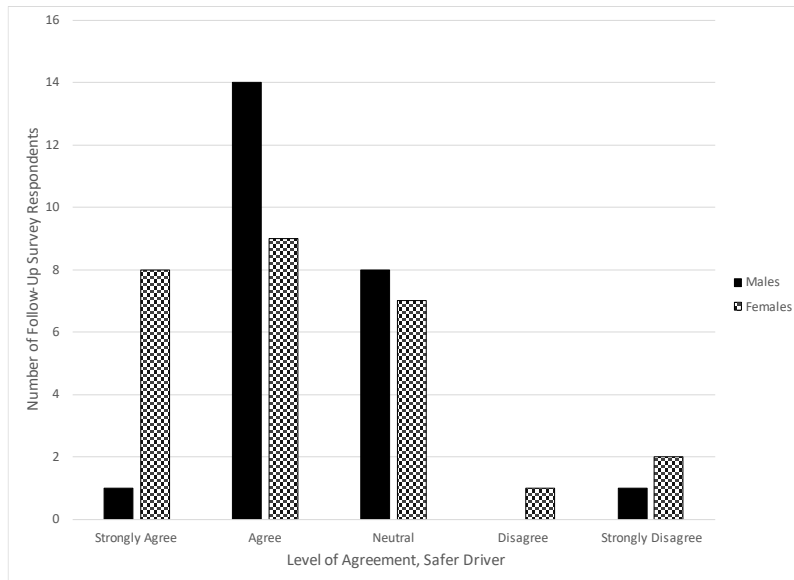


Figure 41: Level of agreement with being a safer driver: gender.

Overall, level of agreement regarding whether or not someone reported being a safer driver as a result of viewing the traffic safety videos is “Neutral.” However, as seen with respect to whether or not someone reported a change in driver behavior, it would appear that the Bozeman facilities both had follow-up survey respondents who reported lower levels of agreement when compared with the other locations (Figure 42). So again, some differences in traffic safety culture for the Bozeman area may exist when compared with the other locations included in this study.

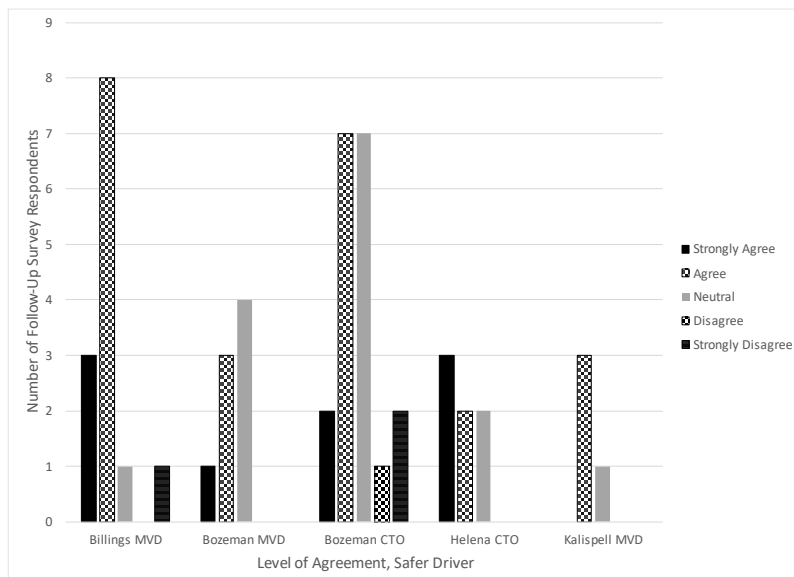


Figure 42: Level of agreement with being a safer driver: data collection location.

5.3.6 Statements Related to Screen Captures

Next the researchers wanted to better understand how age, gender and data collection location of individuals who selected the statements “It made me think of my family members” and “It made me think of a time when I had a close call”, as these statements were selected by the greatest number of follow-up survey respondents.

First, consider the statement, “It made me think of my family members”. With the limited data, no statistically significant difference was found (Table 47).

Table 47: Comparing the ages of follow-up survey respondents who selected “It made me think of my family members.” as compared with those who did not.

Statistic	Did not indicate agreement	Agreed with the statement, “It made me think of my family members.”
n	33	14
Minimum	19	27
Average	47.94	44.79
Maximum	73	65
Standard Deviation	16.07	13.19
Z	0.70	

Next, the researchers considered the impact of gender on whether or not a survey respondent agreed with the statement, “It made me think of my family members” (Table 48). Again, no statistically significant difference was found.

Table 48: Comparing the gender of those reporting agreement with the statement, “It made me think of my family members.”.

Statistic	Male	Female
n	31	37
Reported that, “It made me think of my family members.”	6	8
p	0.19	0.22
Z	-0.23	

When considering the data collection location with respect to this statement, the results suggest that consideration for one’s family members is most impactful for patrons of the Bozeman CTO and least impactful for the patrons of the Kalispell MVD (Figure 43).

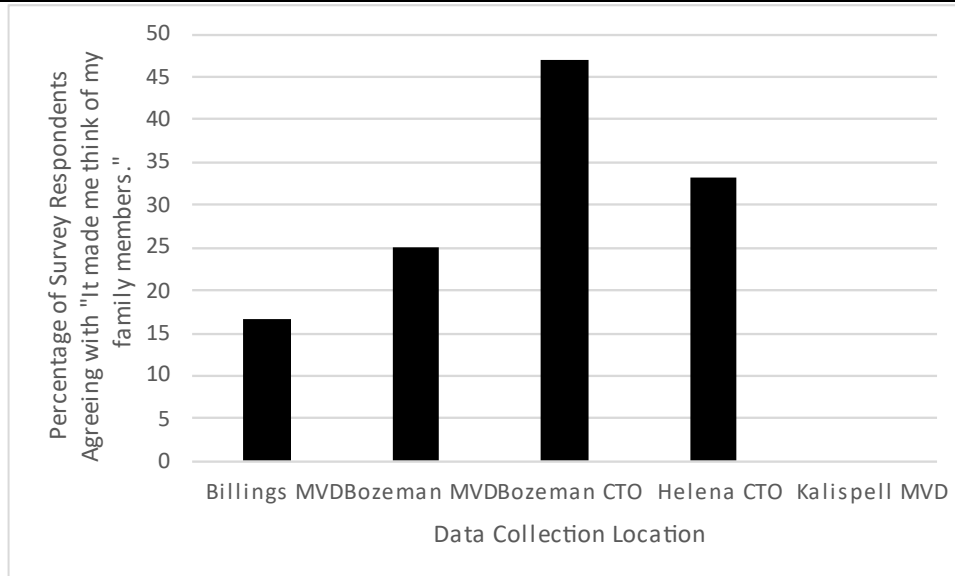


Figure 43: Agreement with "It made me think of my family members." by data collection location.

When considering the statement, "It made me think of a time when I had a close call.", the researchers wanted to understand if age impacted whether or not a survey respondent agreed with the statement. The results suggest that age does not impact one's agreement with the statement (Table 49).

Table 49: Comparing the ages of follow-up survey respondents who selected "It made me think of a time when I had a close call." as compared with those who did not.

Statistic	Did not indicate agreement	Agreed with the statement, "It made me think of a time when I had a close call."
n	33	14
Minimum	20	19
Average	47.21	46.50
Maximum	72	73
Standard Deviation	13.91	18.44
Z	0.13	

Next, the researchers wanted to determine if the gender of the survey respondent influenced whether or not they agreed with the statement, "It made me think of a time when I had a close call". The results suggest that females were more likely to agree with the statement (Table 50); however, again, the sample size for males is small (i.e., 3).

Table 50: Comparing the gender of those reporting agreement with the statement, “It made me think of a time when I had a close call.”.

Statistic	Male	Female
n	31	37
Reported that, “It made me think of a time when I had a close call.”	3	11
p	0.097	0.30
Z	-2.04	

Finally, the researchers considered whether or not data collection location influenced the survey respondents’ level of agreement with this statement. Survey respondents from Helena CTO followed by Kalispell MVD reported the greatest level of agreement (Figure 44). However, these two locations have the fewest survey respondents (Helena CTO = 6; Kalispell MVD = 4).

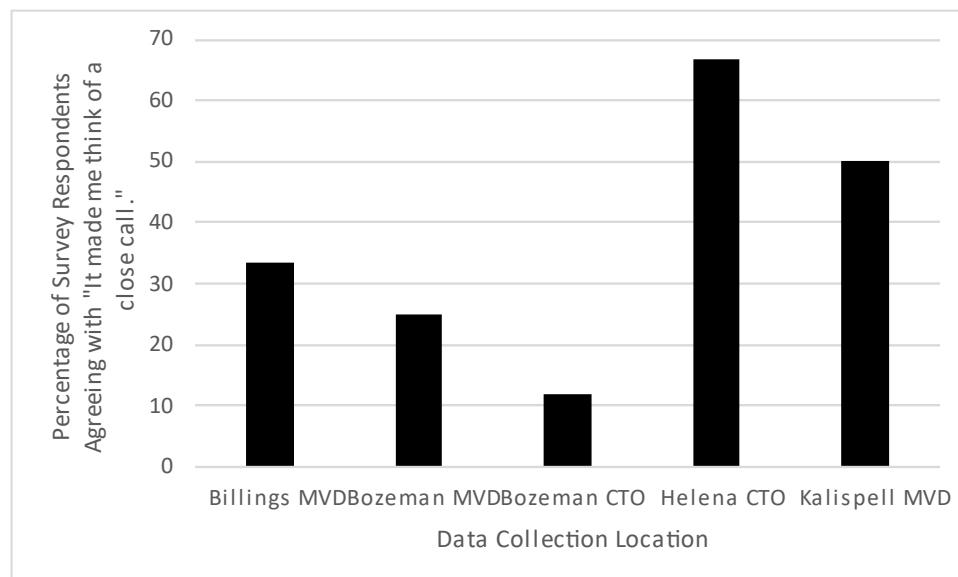


Figure 44: Agreement with “It made me think of a close call.” by data collection location.

5.3.7 Follow-Up Survey Data Summary

Overall, the limited data available for follow-up surveys presented challenges due to limited responses. Therefore, caution should be taken regarding assigning too much value to the results, as a larger data set is recommended in order to draw more definitive conclusions. However, the results do provide a rich data source, as they represent a compilation of all of the questions from the intercept and follow-up surveys.

While some survey respondents took advantage of the hard copy survey option, in large part, most of those that participated did so online. This could have influenced the limited demographic variability associated with the follow-up surveys.

an impact on behavior, they noted as such in the context of thinking of their family or a close call. The information associated with the screen captures was more likely to be shared as compared with slogans.

Follow-up survey respondents reported a lower likelihood in their beliefs being changed, although they did suggest that the traffic safety information resulted in them being safer drivers. When considering if age, gender, and the length of time waiting at a facility, neither the recall of screen captures or a change in beliefs was found to have occurred. When considering if changes in driving behaviors were made as a result of the traffic safety information, survey respondents were more likely to report a change in behavior if they were older, if they were female, and if the follow-up survey respondent was accessing services at the Billings MVD, the Helena CTO or the Kalispell MVD locations. Identifying as female and being older coincide with the findings from Islam et al. (Islam, Thue, & Grekul, 2017). Follow-up survey respondents who had completed the intercept survey at the Bozeman CTO were more likely than the other locations to report that they thought of family members when viewing the traffic safety information. Finally, those who reported thinking of a close call when presented with the traffic safety information tended to be female, and the intercept survey was completed at the Helena CTO or Kalispell MVD locations.

6 Discussion, Conclusions & Future Research

Overall, the videos were recalled more often than the slogans, both during the intercept surveys and the follow-up surveys. Additionally, if the information was shared, it was more likely to be shared when the information was provided via one of the videos as compared with a slogan. The length of time that a video represented within the traffic safety video loop seemed to influence its recall. Furthermore, the type of video influenced recall, with videos that engage an emotional response as resulting in more likely to be recalled. Furthermore, while relatively few people reported behavioral changes as a result of the traffic safety videos, they were more likely to report that they expected to be safer drivers. Overall, the traffic safety videos have impact. Once they are set-up and can run for a period of time (i.e., six months), the level of effort and cost associated with disseminating the information is, relatively speaking, low. In addition, when considering the demographics reached at these facilities, there is promise in reaching the desired age and gender demographic (male, aged eighteen to thirty-four) that many of MDTs media campaigns are currently targeting.

The influence of the location of the TV on enabling the dissemination of the traffic safety information cannot be understated. This effort suggests that locating the TV where it is most conspicuous is best, either within direct view for visitors waiting to be seen by an examiner or behind the examiner desk while a visitor waits for them to enter information. While each site was meticulously reviewed and the location of the TVs identified, in some cases, construction occurred between when the facility was reviewed and when the TV was installed. In addition, as a result of COVID-19, chairs were re-organized to allow for social distancing, impacting the TV location. Similarly, only a few individuals were allowed in the MVD or CTO at a time to facilitate social distancing; hence, those individuals entering the facilities may only see the TVs, and consequently the videos, for an abbreviated period of time.

An important point that must be made regarding the data which was analyzed is that the data analyzed is only from those individuals willing to complete an intercept survey. Persons over the age of eighteen exiting the MVDs and CTOs were asked to participate in the intercept survey. As outlined in the previous sections, the participation rate was low. Hence, there is a possibility that the results may not represent the average Montanan dependent upon how well the collected data represents those making use of services at the MVDs and CTOs. In addition, considering that individuals as young as fifteen can drive in Montana, extending the surveys to include Montanans fifteen and older would enable a better understanding of the impact of the traffic safety videos on disseminating information to the youngest of Montana drivers.

Technology continues to evolve. It was only about twenty years ago when the concept of a smartphone seemed futuristic. Therefore, when trying to consider other ideas that may be pursued that would allow traffic safety information to get to the end user may be the following: geofence the locations and pay for social media dissemination of the videos; have the videos play on the website as a part of the process to make an appointment; hand out a rack card that has factual information on it with a QR code to a video on both sides of the card; and require customers to watch a video to access free internet at a facility (similar to that done at airports).

Sound was not included with the videos in order to not be a nuisance for the employees at the MVDs and CTOs. However, some survey respondents reported that they could not hear sound, suggesting that including this additional sensory approach to disseminating information may have been of value to some MVD/CTO patrons. In addition, based on the theory of cognitive learning (Jabbour, 2012), using both the visual and auditory channels can ensure that the disseminated

information does not overload them. Sound may also draw more attention to the TVs, and subsequently the video sequences, as well. A future research project could test the impact of including sound with the videos.

The longer a survey is, the less likely they will be fully completed by a survey respondent. As a result, surveys shorter in length were targeted. Therefore, while the complexity of the research approach could warrant many more detailed questions, the questions ultimately included had to be prioritized to obtain information that would directly answer the research questions. As a result, questions that asked about, for example, the impact of trivia on people's perception of whether or not they may be a safer driver were omitted. Yet, in open-ended questions, survey respondents suggested that trivia may have been impactful. Therefore, future research studies could seek to add compensation which may encourage a survey respondent's participation in a longer survey. Future survey efforts for similar projects could also include in the budget survey efforts that were tiered, where they asked about the impacts of the video sequences and then a subsequent survey would be developed based on what was learned during the first surveying effort.

7 References

- AAA Foundation for Traffic Safety. (2021). *2020 Traffic Safety Culture Index*.
- Armstrong, R. A. (2019, April 17). *Is there a large sample size problem?* Retrieved from Wiley Online Library: <https://onlinelibrary.wiley.com/doi/full/10.1111/opo.12618>
- Benzaman, B., Ward, N. J., & Schell, W. J. (2022). The influence of inferred traffic safety culture on traffic safety performance in U.S. States (1994-2014). *Journal of Safety Research*, 80, 311-319.
- Brown, S. (2010, December). *Likert Scale Examples for Surveys*. Retrieved November 30, 2022, from <https://www.extension.iastate.edu/documents/anr/likertscaleexamplesforsurveys.pdf>
- Coogan, M. A., Campbell, M., Adler, T. J., & Forward, S. (2014). Examining behavioral and attitudinal differences among groups in their traffic safety culture. *Transportation Research Part F*, 26, 303-316.
- Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, Phone, Mail, and Mixed-Mode Surveys: The Tailored Design Method* (Fourth ed.). Hoboken, New Jersey: John Wiley & Sons, Inc.
- Edwards, J., Freeman, J., Soole, D., & Watson, B. (2014). A framework for conceptualising traffic safety culture. *Transportation Research Part F*, 26, 293-302.
- Islam, M. T., Thue, L., & Grekul, J. (2017). Understanding Traffic Safety Culture. *Transportation Research Record: Journal of the Transportation Research Board*, 2635, 79-89.
- Islam, M., Thue, L., & Grekul, J. (2017). Understanding Traffic Safety Culture. *Transportation Research Record: Journal of the Transportation Research Board*, 2635, 79-89.
- Jabbour, K. K. (2012, September). Presents Spoken Texts in Multimedia Instructions as an Alternative to Printed Texts. *Journal of Education and Vocational Research*, 3(9), 297-302.
- Montana Department of Transportation (MDT). (2020). *Montana Comprehensive Highway Safety Plan*. Retrieved December 1, 2022, from <https://www.mdt.mt.gov/visionzero/plans/docs/chsp/current-chsp.pdf>
- National Highway Traffic Safety Administration. (2022, June). *Traffic Safety Facts: 2022 Data*. Retrieved November 17, 2022, from <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813320>
- Silva, T. C., Laiz, M. T., & Tabak, B. M. (2020). Traffic campaigns and overconfidence: An experimental approach. *Accident Analysis and Prevention*, 146.
- Sujon, M., & Dai, F. (2021). Social Media Mining for Understanding Traffic Safety Culture in Washington State Using Twitter Data. *Journal of Computing in Civil Engineering*, 35(1).
- U.S. Census Bureau. (2020). *American Community Survey 5-Year Estimates Subject Table DP05: Demographic and Housing Estimates*. Retrieved November 10, 2022, from <https://data.census.gov/>
- U.S. Census Bureau. (2020). *American Community Survey 5-Year Estimates Subject Table S0101: Age and Sex*. Retrieved November 10, 2022, from <https://data.census.gov/>
- Ward, N. J., & Ozkan, T. (2014). In consideration of traffic safety culture. *Transportation Research Part F*, 26, 291-292.
- Yoh, K., Uchiyama, C., Hung, P.-H., & Doi, K. (2019). A video-based approach to promote safe driving among foreign visitors to Japan. *IATSS Research*, 43, 139-147.

8 APPENDIX A: Intercept Surveys

First Video Sequence, Video/Content, Source, Topics and Duration

Video/Content	Source	Topic(s) Covered	Media Type	Duration (seconds)
Title slide	Researchers	Introduction	Static Title	5
Vision Zero – Just One Reason	Montana Department of Transportation (MDT)	Buckle up	Video	30
What’s Your One Reason?	MDT	Buckle up	Infographic	20
Cycling Safety Is Everyone’s Responsibility	Canadian Automobile Association of South Central Ontario	Bicycle safety	Video	15
Share the Freedom of the Open Road	National Highway Traffic Safety Administration (NHTSA)	Bicycle safety	Infographic	5
Look Twice, Save a Life	Colorado Department of Transportation, Colorado State Patrol	Motorcycle safety	Video	22
Trivia Check-In! - question	Researchers	Motorcycle safety	Trivia	16
Trivia Check-In! – answer	Researchers	Motorcycle safety	Trivia	5
Slow Down and Move Over	Emergency Responder Safety Institute	Emergency responder safety	Video	32
See These? Do This.	NHTSA	Emergency responder safety	Infographic	10
Rules of the Roundabout	U.S. Department of Transportation, Federal Highway Administration	Roundabout safety, roundabout driving tips	Video	137
Trivia Check-In! – question	Researchers	Roundabouts	Trivia	10
Trivia Check-In! – answer	Researchers	Roundabouts	Trivia	8
MT Real ID 2021 03 Fly	Montana Department of	Real ID	Video	30

Video/Content	Source	Topic(s) Covered	Media Type	Duration (seconds)
	Justice Motor Vehicle Division			
Photo of an open road	Neil Hetherington, WTI	Transition	Transition image	5
Gratitude Video	MDT	Sober Ride Home	Video	30
What will a DUI cost you?	MDT	Costs of driving under the influence	Infographic	15
Don't Crowd the Plow	New York State Department of Transportation	Snow plow operating safety	Video	15
Photo of a road in the snowy mountains	MDT	Transition	Transition image	5
End Credits	Researchers	Credits	Transition picture	10
Total Run Time				7 minutes, 5 seconds

First Video Sequence, Intercept Surveys, August/September 2021 Data Collection

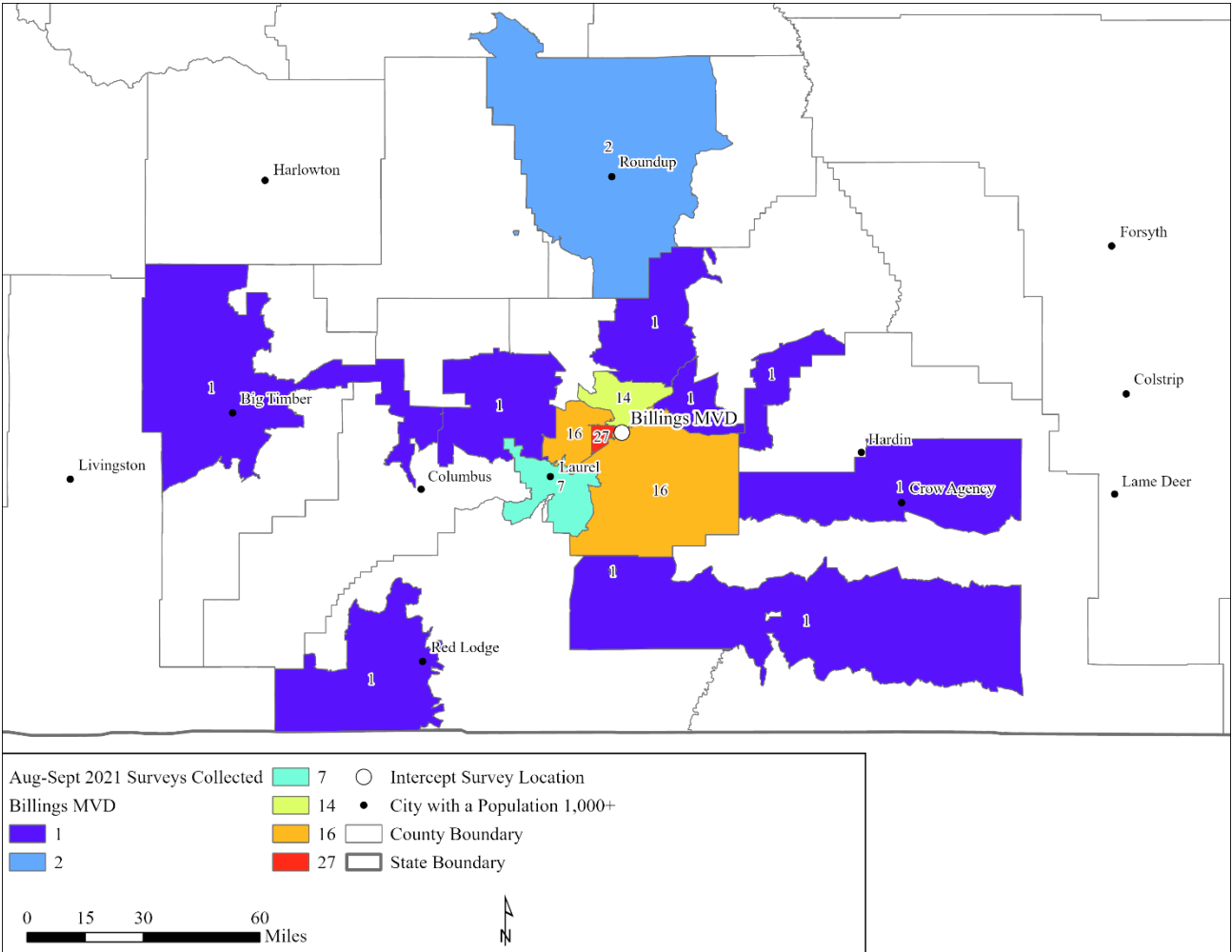
Date	Billings MVD	Bozeman CTO	Bozeman MVD	Helena CTO	Kalispell MVD
August 16, 2021	12:30-4:30pm (32.7%)				
August 17, 2021	7:30-11:30am (53.1%)				
August 18, 2021					12:40- 4:45pm (70.4%)
August 19, 2021					8-12pm (82.4%)
August 23, 2021		12:30- 4:30pm (38.7%)			12-4:30pm (81.0%)
August 24, 2021				2-6pm (31.3%)	8-12pm (68.0%)
August 25, 2021				7-11am (60.9%)	
August 26, 2021	7:30-11:30am (40.0%)		12:30- 4:30pm (30.0%)		
August 27, 2021	7:30-11:30am (56.0%)	8-12pm (38.2%)			
August 30, 2021				2-6pm (25.0%)	9-12:20pm (66.7%)
August 31, 2021		12:30-5pm (45.7%)			
September 1, 2021	12:30-4:30pm (36.4%)	8-12pm (32.1%)			
September 2, 2021	12:30-4:30pm (33.3%)		7:30- 11:30am (51.6%); 1:45-4:30pm (37.9%)		
September 3, 2021		7:30- 11:30am (55.3%)			
September 7, 2021		1-5pm (33.3%)	12-4:30pm (55.6%)		
September 8, 2021				2-6pm (33.3%)	
September 9, 2021			7:30- 11:30am (61.2%)	7-11am (27.3%)	
September 10, 2021				7-11am (23.7%)	1-4:30pm (46.2%)

First Video Sequence, Intercept Surveys, October/November 2021 Data Collection

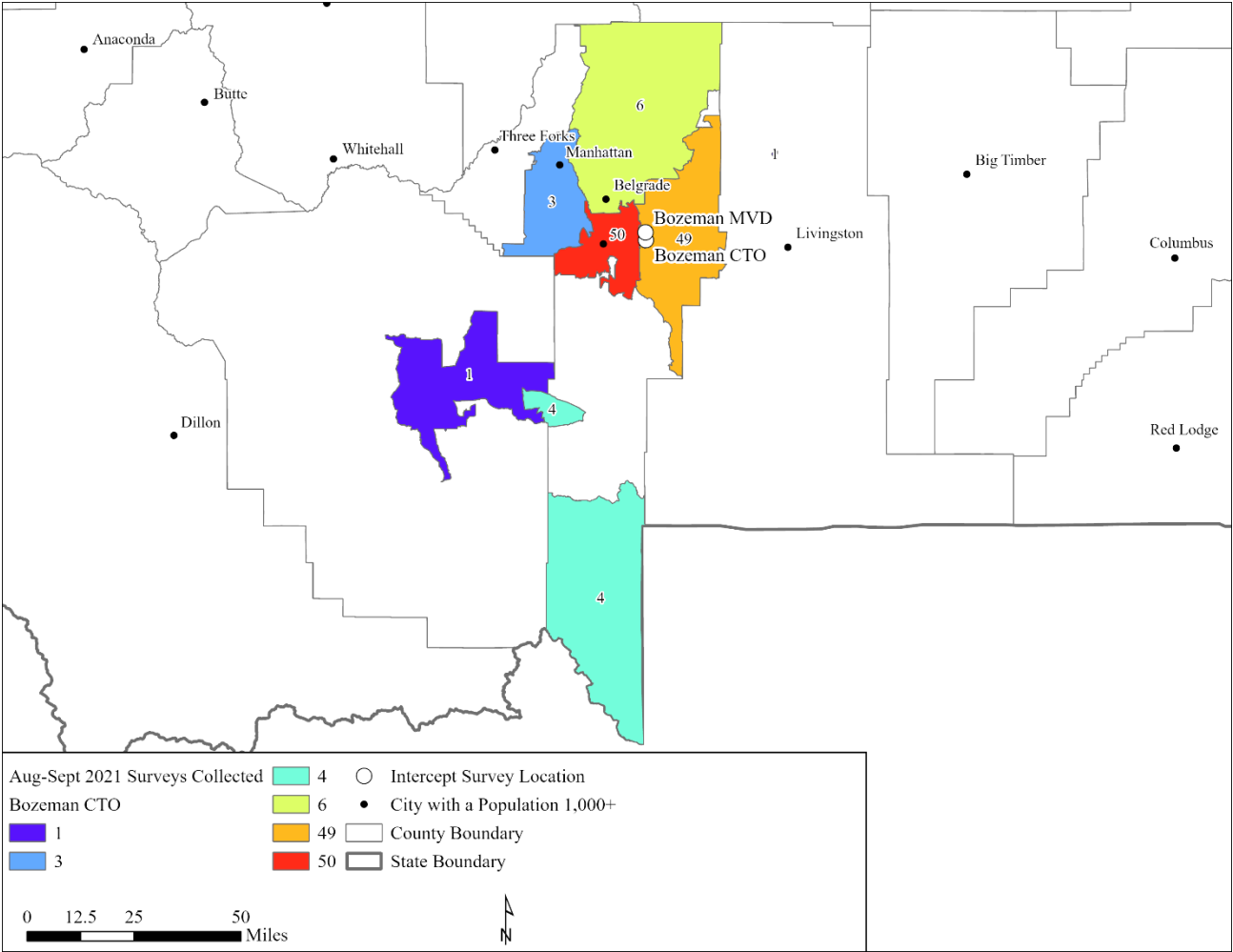
Date	Billings MVD	Bozeman CTO	Bozeman MVD	Helena CTO	Kalispell MVD
October 18, 2021		8-12pm (22.5%)			
October 19, 2021	7:30-11:30am (55.3%)	12:30-5pm (48.8%)			
October 20, 2021	12:30-4:30pm (38.2%)			7:30-11:30am (34.8%); 2-6pm (44.4%)	
October 21, 2021				7:15-11:15am (26.3%); 12:30-4:30pm (20.0%)	
October 22, 2021			12:30-4:30pm (26.5%)		
October 25, 2021	12:30-4:30pm (44.8%)				
October 26, 2021			12:15-4:30pm (47.4%)		8-12pm (64.7%)
October 27, 2021					1-4:45pm (58.1%)
October 28, 2021		8-12pm (23.9%)	7:30-12pm (50.9%)		
October 29, 2021	12:30-4:30pm (36.8%)	1-5pm (33.3%)			
November 1, 2021	9-1pm (28.6%)				
November 2, 2021			12:30-4:30pm (46.2%)	8-12pm (18.8%); 1:30-5:30pm (10.4%)	
November 3, 2021					8-12pm (69.2%)
November 4, 2021	7:30-11:30am (72.7%)	9-1pm (42.9%)	7:30-11:30am (46.7%)		1-4:30pm (84.6%)
November 5, 2021			8-12pm (37.1%)		1-4:50pm (77.3%)
November 9, 2021			12:30-		1-4:45pm

			4:30pm (59.2%)		(70.0%)
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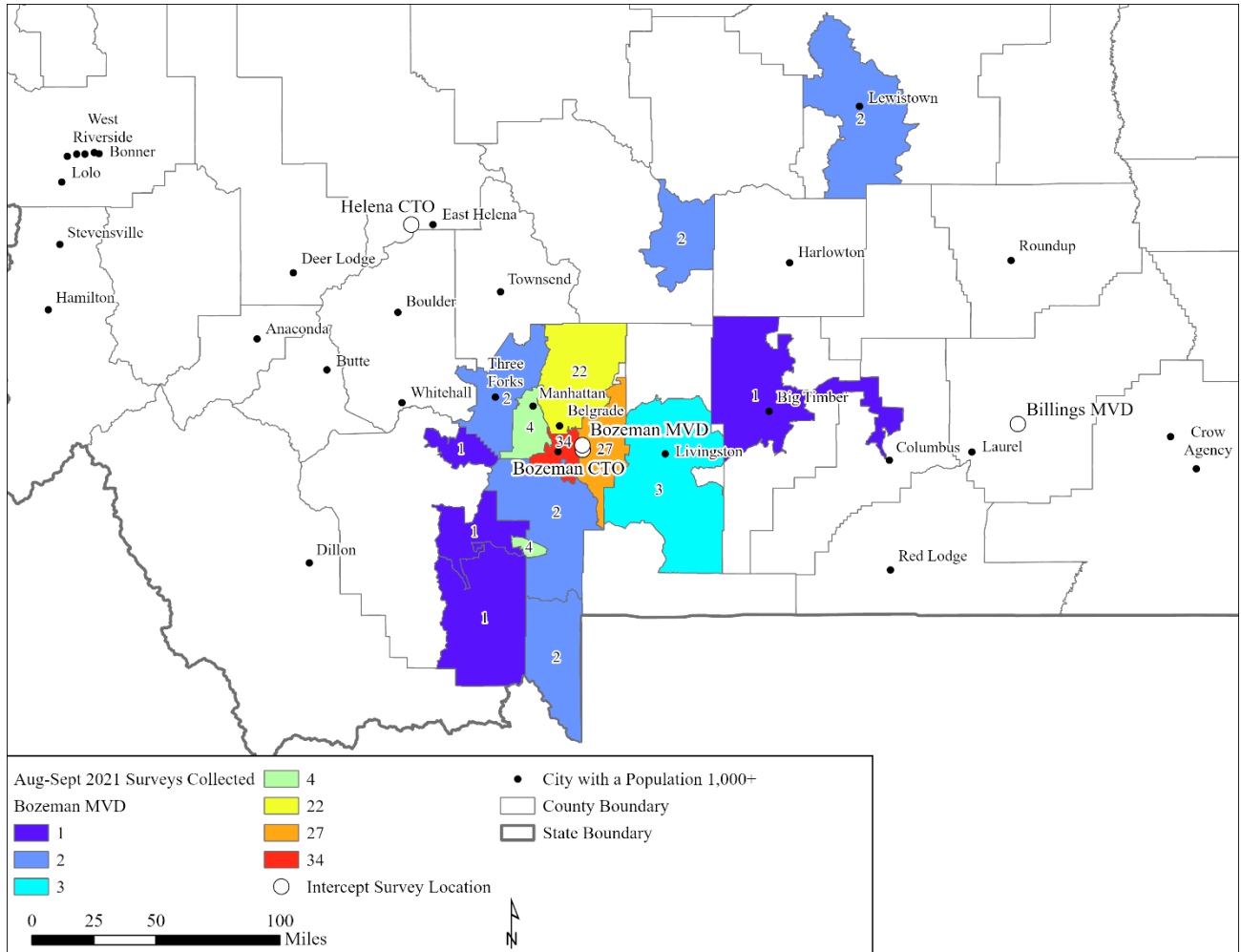
First Video Sequence, Intercept Surveys, August/September, Billings MVD



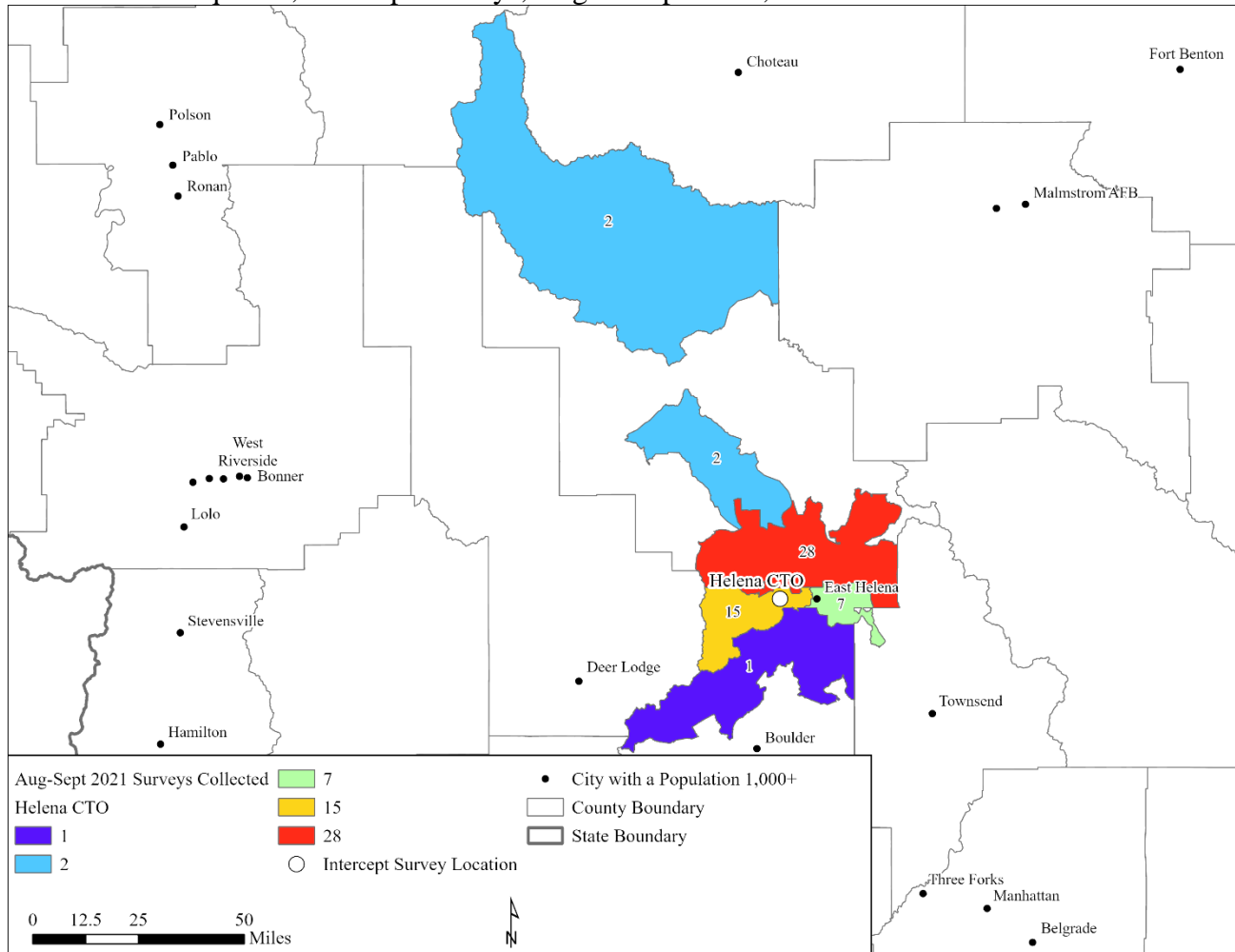
First Video Sequence, Intercept Surveys, August/September, Bozeman CTO



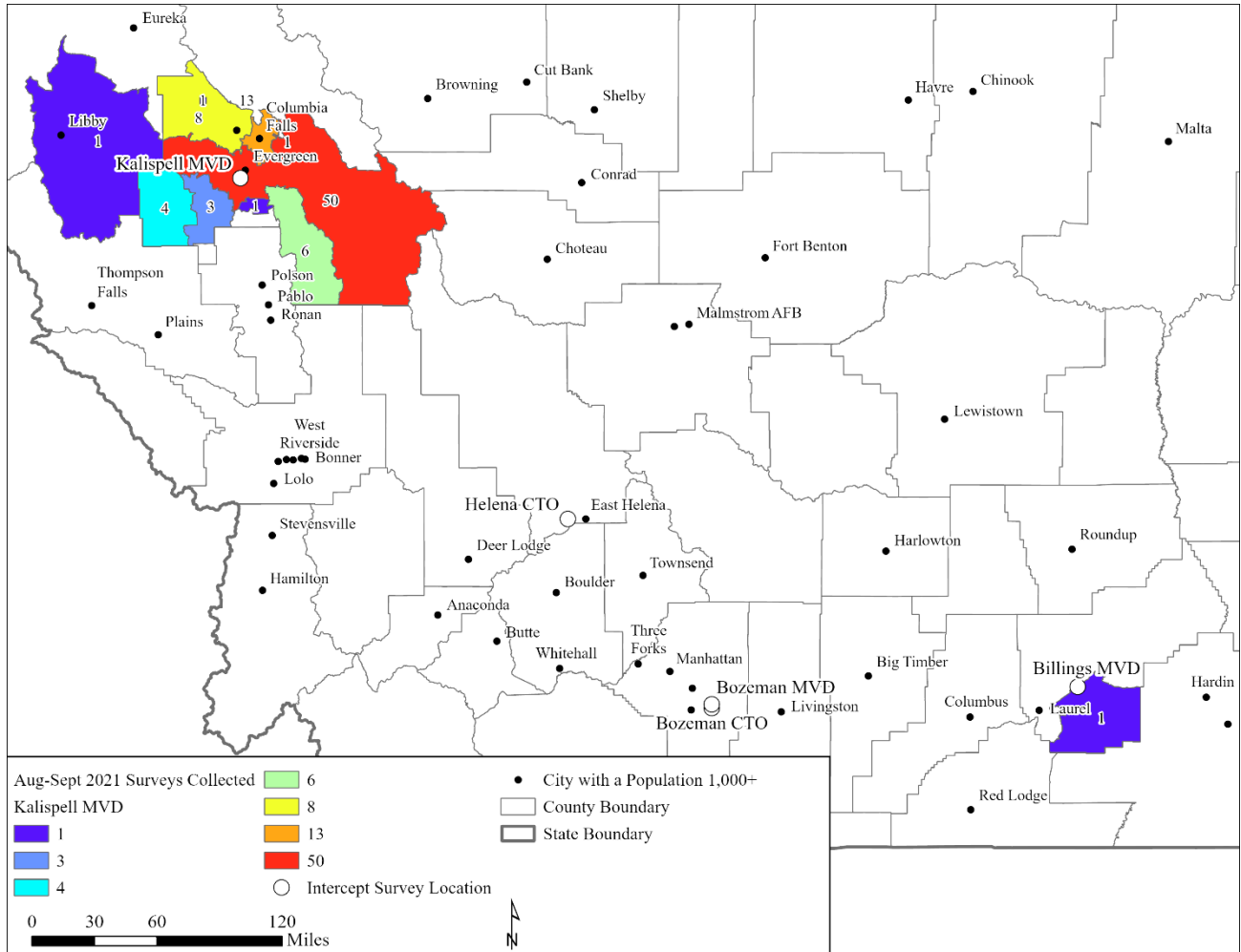
First Video Sequence, Intercept Surveys, August/September, Bozeman MVD



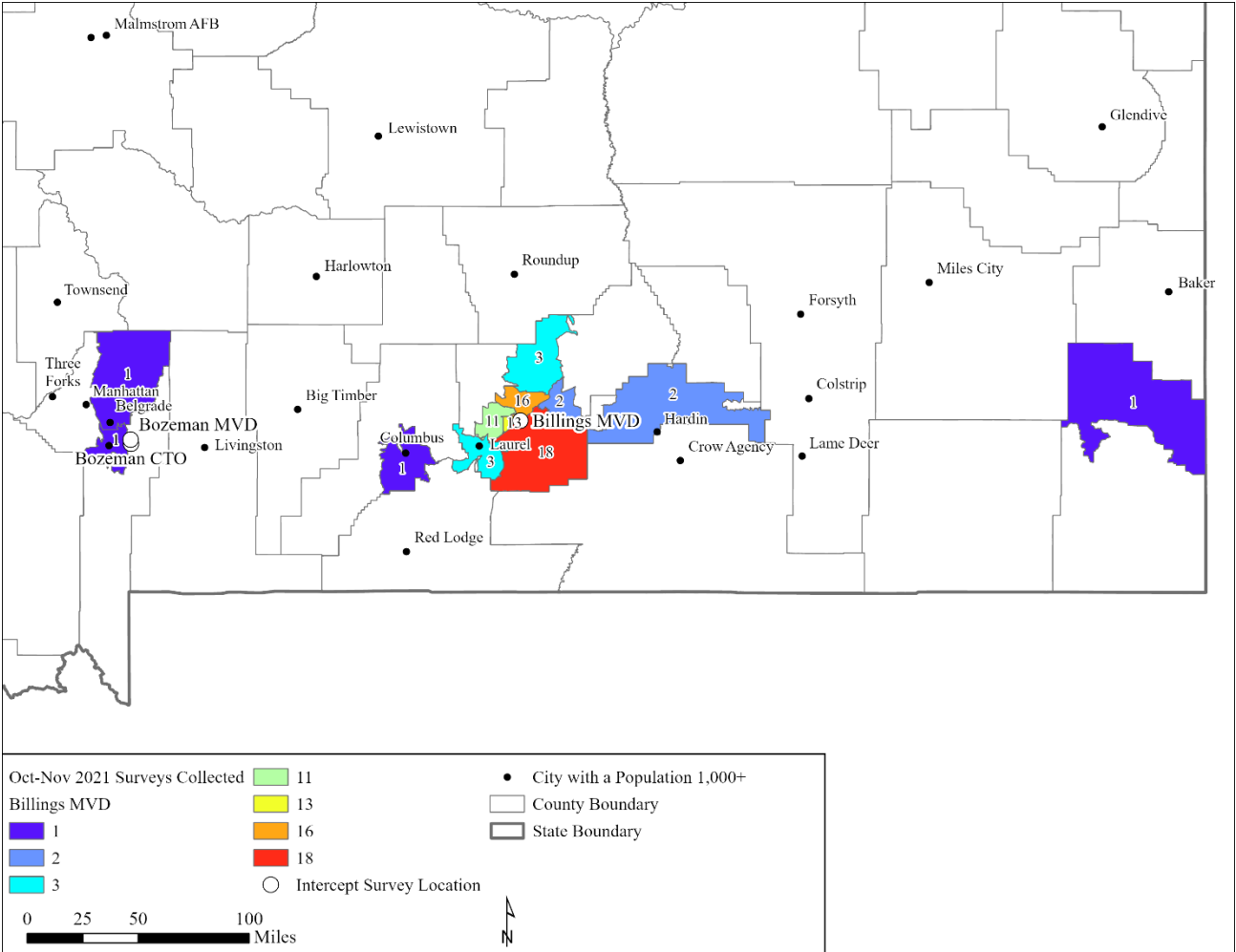
First Video Sequence, Intercept Surveys, August/September, Helena CTO



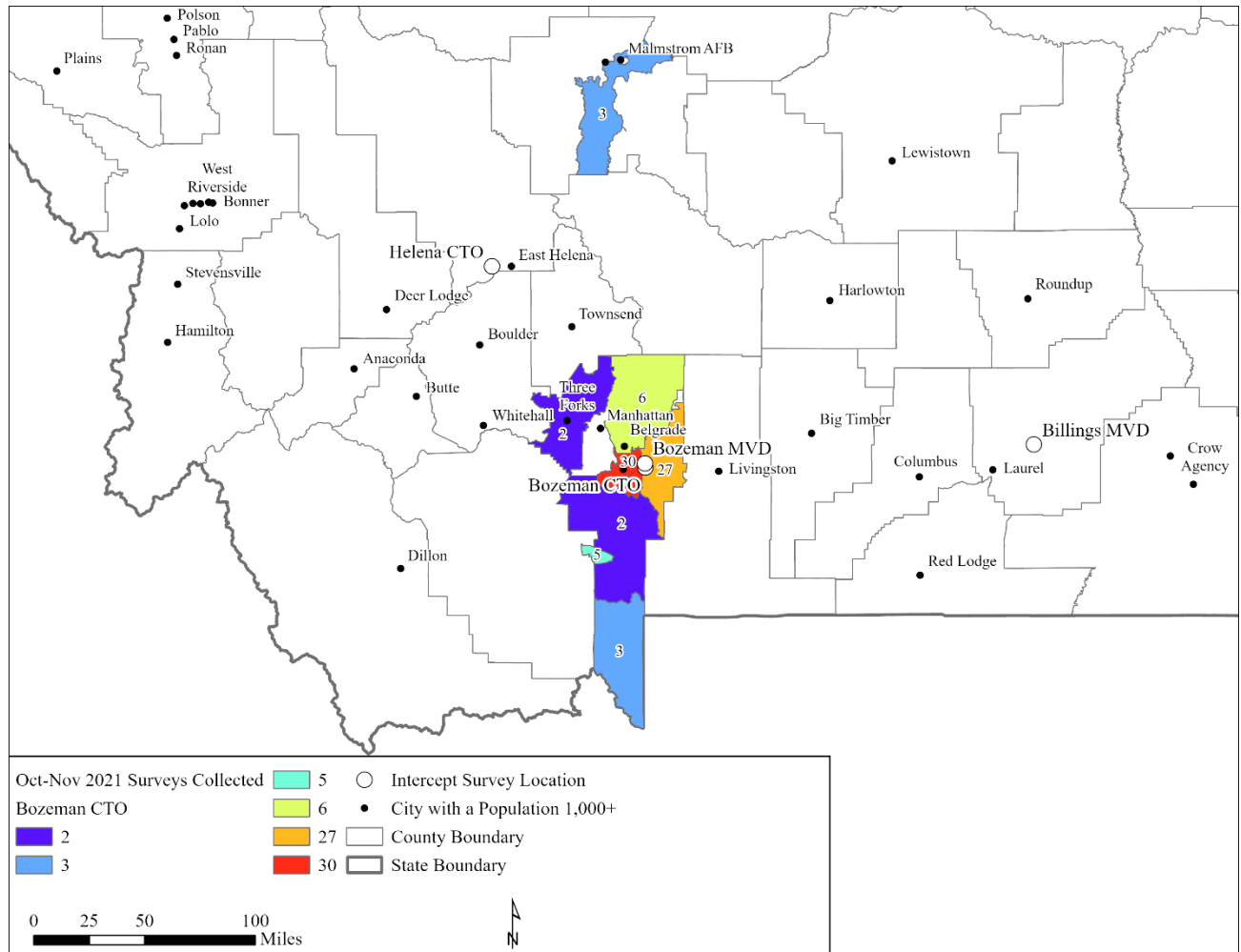
First Video Sequence, Intercept Surveys, August/September, Kalispell MVD



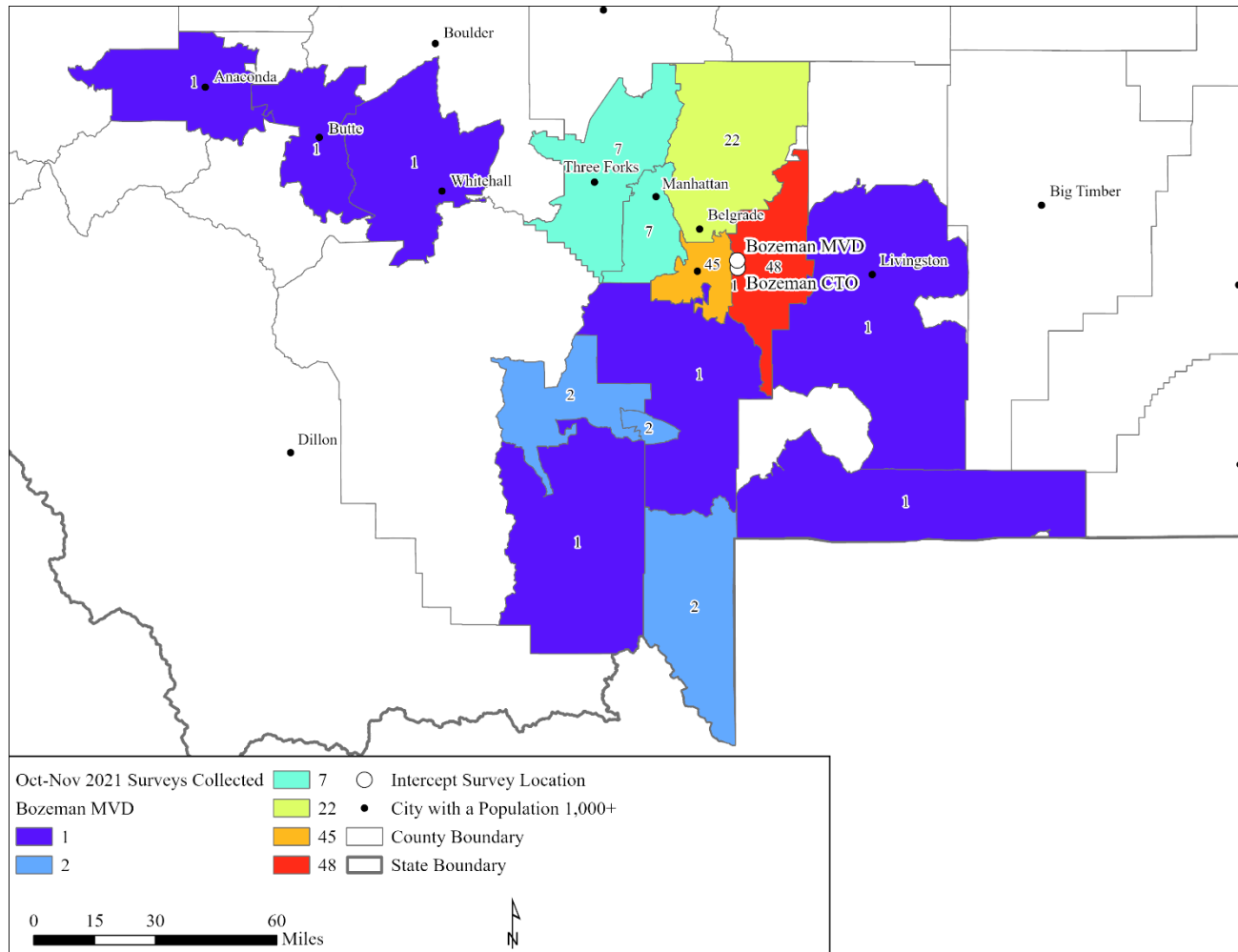
First Video Sequence, Intercept Surveys, October/November, Billings MVD



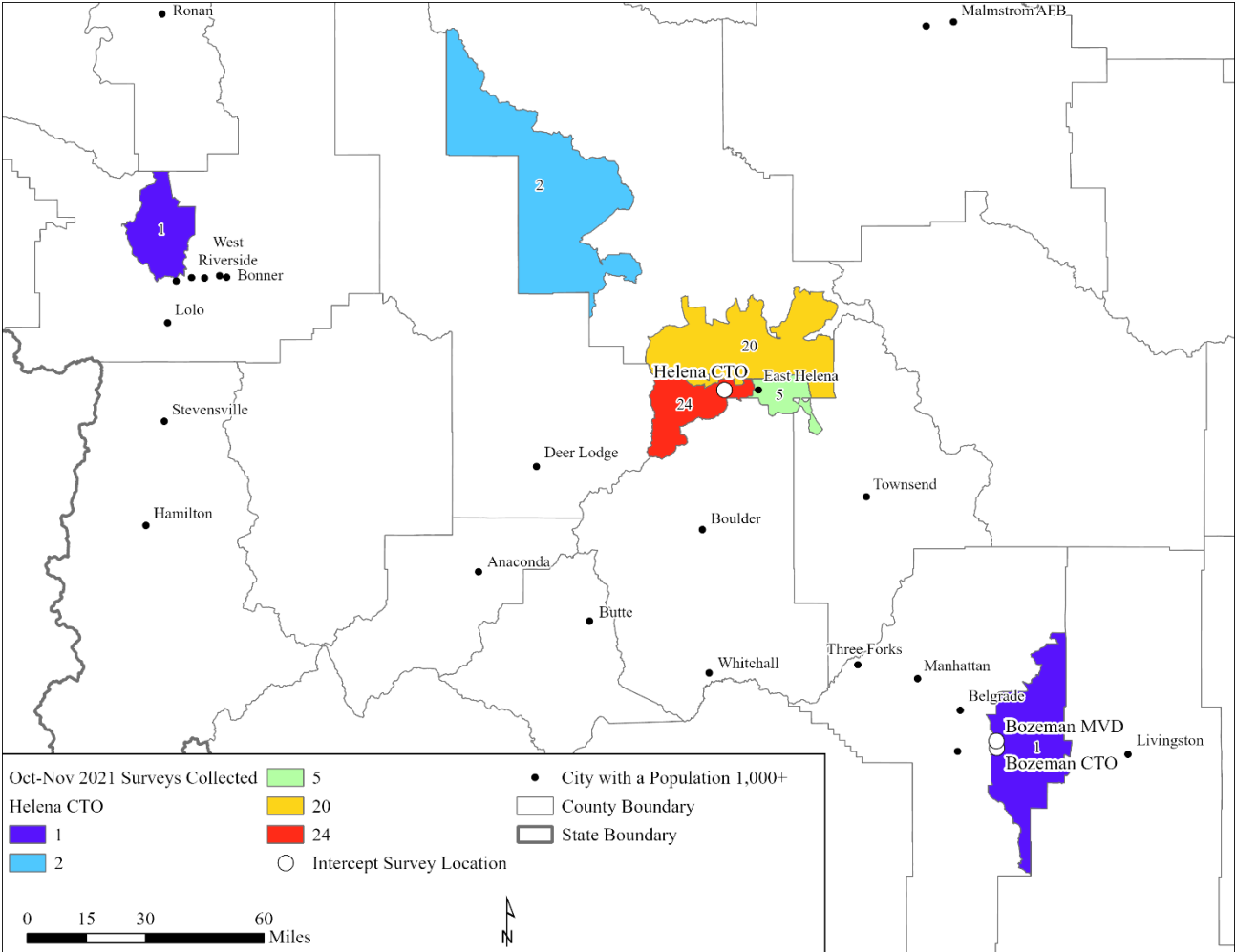
First Video Sequence, Intercept Surveys, October/November, Bozeman CTO



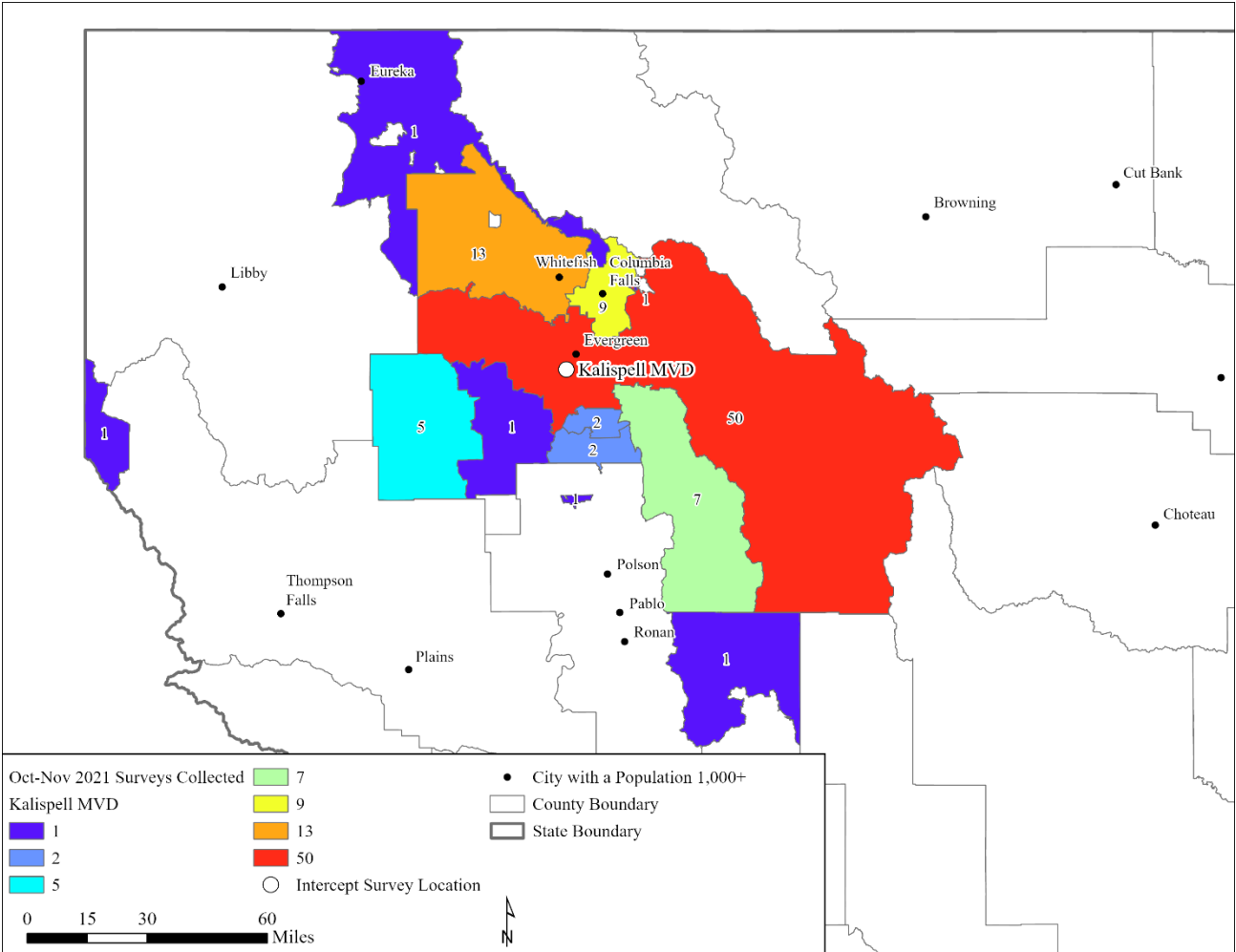
First Video Sequence, Intercept Surveys, October/November, Bozeman MVD



First Video Sequence, Intercept Surveys, October/November, Helena CTO



First Video Sequence, Intercept Surveys, October/November, Kalispell MVD



Memorable Notes, First Video Sequence

The following are comments received when intercept survey respondents were asked what was most memorable about the videos from the first data collection period (August/September):

- 1) Nice staff
- 2) Good graphics
- 3) Fast & polite
- 4) Robert – the Evil one. “Life is too good not to”
- 5) Great staff
- 6) Great rep.
- 7) Roundabout instructions
- 8) Great representative
- 9) Evil kinevil meets lewis & clark skit was fantastic
- 10) Staff is very friendly
- 11) I’ve seen these @ other visits here, just didn’t watch the screen this time.
- 12) How to use a roundabout – some people can’t...lol
- 13) None, was at a different area
- 14) Roundabouts reduce severe crashes by 80%
- 15) Support firemen & police “got your back”
- 16) Snowplows and the roundabout
- 17) Nice employees
- 18) The correct way to operate around a roundabout.
- 19) Percentage that they help
- 20) The part about the roundabout. I believe a lot of people need a reminder!
- 21) Guy in evil caneaval outfit
- 22) Everyone nice & helpful
- 23) Quiz question
- 24) The explanation of how to use a roundabout
- 25) Nice people
- 26) Irritation @ the roundabouts being put in...again
- 27) Safety info on seat belts, etc.
- 28) The lady who helped us was very pleasant and helpful
- 29) The receptionists were very polite and knowledgeable
- 30) 80% decrease in accidents
- 31) No video
- 32) 4hr + on 3 different time
- 33) One quiz about motorcycle helmet safety
- 34) Good attitude
- 35) Roundabouts
- 36) Buckle up
- 37) Very friendly staff
- 38) Real ID ad
- 39) First time I came here we all ate McDonalds together, 10/10 recommend this DMV
- 40) Very nice visit
- 41) Great customer service!
- 42) Some dc questions
- 43) Roundabout
- 44) Roundabouts are safe

- 45) Motorcycle safety
- 46) Using a traffic circle
- 47) No rules about roundabout...would like to know more
- 48) The comments on why they wear a seatbelt
- 49) Drive slow/wear a helmet
- 50) Roundabouts help with safety by 40%
- 51) Seatbelts – zero
- 52) Driving trips/reminders/rules of the road
- 53) Watch for motorcycles; roundabouts are safe!
- 54) Move over for emergency vehicles; zero thing
- 55) Didn't watch
- 56) Didn't see a monitor
- 57) None
- 58) Renewal line is always faster!
- 59) None, I just looked @ maps
- 60) To stop at the yield sign and check all ways
- 61) How to on roundabout
- 62) Carrie, Dee & Sharon were very pleasant, and helpful
- 63) I didn't see any videos
- 64) Roundabout instructions and safety
- 65) Motorcycle
- 66) DUI
- 67) Helpful and prop...people
- 68) Fast
- 69) I'm sorry, I didn't notice any videos.
- 70) Very nice receptionists
- 71) Look twice. Save a life.
- 72) Emergency vehicles move over. Snow plow
- 73) Trivia was catchy
- 74) Kindness of employees

The following are comments received when intercept survey respondents were asked what was most memorable about the videos from the second data collection period (October/November):

- 1) Very friendly people at checkin and service
- 2) Real ID poster
- 3) Was good
- 4) There is not a clear identification online to let a woman know a marriage certificate is not a marriage license.
- 5) How to operate on a roundabout
- 6) Dereck's personality was awesome
- 7) Good service; very nice people
- 8) Lady was so very nice and wonderful
- 9) Sober driving videos
- 10) Stay in your lane
- 11) All
- 12) Trivia questions
- 13) Liked the roundabout rules
- 14) I did not watch it

-
- 15) Did not see TV
 - 16) Buckle up, roundabouts decrease accidents by 80%, request designated/sober driver; buckle up
 - 17) Roundabout = great info.
 - 18) Remember evil conivel
 - 19) Went to county planning office
 - 20) Nope
 - 21) I did not watch anything
 - 22) Very helpful both places
 - 23) I didn't see the video; we went to the 2nd floor
 - 24) Not applicable – multiple offices
 - 25) Mostly looked at my phone
 - 26) Roundabout = great info.
 - 27) Friendly helpful staff!
 - 28) Directions for roundabout
 - 29) None
 - 30) Nothing
 - 31) I only recall a few smiles
 - 32) None
 - 33) Reason to buckle up – quotes
 - 34) Seat belts
 - 35) Trivia
 - 36) Robbie Kneival in red white & blue; already knew “Never Drink and Drive” and “Slow down, look around, be ready to yield,” but “refreshed”
 - 37) Real ID & DUI
 - 38) Very nice staff and trainee
 - 39) “already know them all” – the slogans
 - 40) My theatre teacher from high school is the sober grandfather
 - 41) Didn't watch
 - 42) Didn't see it
 - 43) That it was \$80
 - 44) The roundabout
 - 45) 80% decrease in accidents around roundabouts
 - 46) The boss was calling out an employee in front of guest. She does this all the time. Not cool at all
 - 47) Clear pictures
 - 48) Watch for motorcycles
 - 49) n/a; no videos watched
 - 50) very quiet, extremely nice people
 - 51) very nice lady helped me
 - 52) good service, friendly
 - 53) The roundabout video
 - 54) None
 - 55) I didn't have colourblindness today.
 - 56) Nice staff
 - 57) Attendant was very helpful
 - 58) All the main roundabout rules/diagrams
 - 59) Did not have time to watch
 - 60) Kevin was fun to talk with

- 61) Nice people
- 62) The roundabout
- 63) Katherine was wonderful
- 64) Roundabout safety
- 65) Snowplow drivers are busy!
- 66) Didn't see
- 67) Did not watch
- 68) The cars going through the roundabout
- 69) None
- 70) I saw people moving traffic cones
- 71) Buckle up – slow down – move away whole roundabout process
- 72) “knew already” was written wrt to the slogans
- 73) Staff was great
- 74) Happy staff :)
- 75) Roundabout video – I'm a fan of roundabouts
- 76) Did not see
- 77) I hate Oabout
- 78) n/a; I didn't notice the TV monitor until after survey
- 79) how to use a roundabout
- 80) smiling scene between people
- 81) bicycle safety
- 82) roundabout trivia
- 83) roundabout rules and sober driver
- 84) did not watch any
- 85) very nice clerk who helped me
- 86) n/a – didn't see
- 87) how to drive a roundabout
- 88) drivers need more of this (drew arrow to roundabout)
- 89) A lovely clerk helped me out today!
- 90) Yielding
- 91) Deb my instructor was awesome!
- 92) No
- 93) Nothing
- 94) Good service

Memorable Notes, Second Video Sequence

The following are comments received when intercept survey respondents were asked what was most memorable about the videos from the first data collection period (April/May):

- 1) Nice people
- 2) "Slow down for friends" - This was great reminder of people are valuable.
- 3) "Evil Kinevil"
- 4) Rob did a great job - professional and present
- 5) Egg drop
- 6) buckle up add, carseats
- 7) the seconds it takes to look at your phone
- 8) My son got his Driver's License! We went over rules of how many passengers allowed
- 9) Very efficient, polite
- 10) Roundabouts
- 11) cart fell over and eggies got broken
- 12) very kind workers
- 13) Everyone was so nice! Keep up the good work!
- 14) person standing at desk turning in paperwork
- 15) Office people were really nice!
- 16) texting and driving
- 17) I don't recall any
- 18) car seat
- 19) volume was too low
- 20) shopping cart crash
- 21) The evil knieval ad
- 22) I saw one with a stuntman airplane
- 23) very quick and nice experience
- 24) trivia?
- 25) saw construction equipment, but that's it
- 26) used [?] statements on signs
- 27) I am SAM
- 28) almost cried at slow down one
- 29) seatbelts save lives
- 30) broken eggs
- 31) Didn't watch them. They got me right in
- 32) All important
- 33) [e]very thing was fine
- 34) laughing with Derek
- 35) Slow down for Dad's Mom's
- 36) Liked the questions
- 37) The evil kinival dirt bike for real ID
- 38) texting while driving statistic
- 39) The yielding video
- 40) Quick easy and friendly
- 41) roundabouts are hard
- 42) slow down for ---
- 43) nothing really

-
- 44) yellow arrow and slow down
 - 45) Didn't watch any videos
 - 46) saw but did not watch
 - 47) slow down for Dads, Moms,
 - 48) Looking away from the road distracts you for longer than you think
 - 49) reading pamphlets regarding commercial drivers license
 - 50) This may sound stupid but they only mention women once on the signs in the form of moms (referring to the "Slow Down for Friends")
 - 51) Ladies were awesome! Very helpful and good at their job!
 - 52) Sheila was knowledgeable and very pleasant
 - 53) 'Slow down for husbands' struck me as fun[n]y when I looked up - thanks for the gig[g]les and lessening monotony
 - 54) I forgot; montana drivers
 - 55) very pleasant staff
 - 56) Clever videos on curves
 - 57) The people spilling groceries all over; him saying would you drive this way?
 - 58) very kind
 - 59) average time it takes looking away to send a text is 5 seconds
 - 60) The shopping cart comparison to taking a curve too fast in a vehicle
 - 61) pleasant people
 - 62) The funny yet informative video with the signs (pointed to the "Slow Down for Friends)
 - 63) nice workers; orange slow down
 - 64) The yield video it was really informative
 - 65) a disaster at the supermarket
 - 66) grocery cart sign helpers
 - 67) The whole staff was helpful and made my time enjoyable
 - 68) very smooth. Loves how the triage was handled
 - 69) Attention road; big trucks
 - 70) very helpful
 - 71) I saw a sign that said slow down for dads
 - 72) very fast at attending
 - 73) she was very nice and friendly
 - 74) nice vibes; good people
 - 75) texting duration (length of football field)
 - 76) slow for the curve video
 - 77) short and to the point
 - 78) nice people on staff
 - 79) slow down
 - 80) very helpful and nice
 - 81) Trivia questions were informative!
 - 82) L[ura] was very professional
 - 83) SAM
 - 84) texting 5 sec
 - 85) positive experience, friendly staff
 - 86) did not see any videos
 - 87) quick assistance - helpful employee – courteous
 - 88) Man that checks paperwork/now windows; text rule
 - 89) quiz questions

- 90) People were very kind & helpful
- 91) Pump septic/hate roundabouts/trash pick-up/school buses rumble stops
- 92) watch left turns, slow for orange
- 93) That people didn't perceive this as common sense
- 94) Blinking turn lane light

The following are comments received when intercept survey respondents were asked what was most memorable about the videos from the second data collection period (June/July):

- 1) The eggs falling on the floor
- 2) Interesting info.
- 3) The shopping cart one was memorable.
- 4) Did not see any videos
- 5) something about time/distance for 5 sec of cell phone viewing
- 6) I liked the slow down ad
- 7) info about rumble strips; saw some of the words, but didn't focus on them
- 8) I liked the staff and environment
- 9) great service
- 10) Need to pay attention to signs
- 11) You wouldn't do this in a store, so why driving
- 12) Safety; couldn't hear, didn't read captions
- 13) The survey percentages about motorcyclists/crashes
- 14) Multiple choice questions on the video. Quizzed my daughter who recently finished driver's ed
- 15) Slow down for wife, husband, friend, be aware
- 16) I liked the way they "triage" the lobby to get people in the right lines and to expedite things
- 17) Trivia! How long do you look away when texting
- 18) video was dramatic
- 19) The eggs breaking
- 20) Vision zero
- 21) My examiner was awesome!
- 22) 5 seconds driving 55 mph can be as long as a football field.
- 23) rumble strips
- 24) Eggs breaking when cart flips
- 25) Thought it handy to see reminders of traffic rules/regulations
- 26) eggs breaking
- 27) Ladies were awesome
- 28) Stop for husband, fathers, sons, shopping cart spillover
- 29) Excellent!
- 30) Slowing down during construction/Real ID
- 31) Safety
- 32) yield arrow
- 33) baby seat info
- 34) Circled the image of the man buckling his seatbelt because the respondents reported that he thought it was important
- 35) Did not view videos
- 36) bumpy line, median in road, "what are those used for"

-
- 37) Don't be the other guy
 - 38) Ladies were wonderful - very informative - good sense of humor
 - 39) The trivial questions + answers
 - 40) slowing down for workers as they are more than their job.
 - 41) obey the orange
 - 42) car seat
 - 43) only looked up a few times
 - 44) I had signed up on kiosk, did not realize I needed to for renewal, staff personally asked what I needed and directed me to window
 - 45) seen some natives
 - 46) what the stop signs said
 - 47) nothing
 - 48) Nothing
 - 49) buckling up
 - 50) texting while driving is not safe
 - 51) Tell the other guy
 - 52) Why seatbelts? My response - It's the law.
 - 53) Child seat safety
 - 54) Slow down for workers
 - 55) Evil knievel, slow down for fathers/sons, train without bells + whistles
 - 56) Best service ever
 - 57) just glanced
 - 58) slow down 4 people
 - 59) none
 - 60) reinstated road laws
 - 61) shopping cart falling
 - 62) the ad for slowing down in work zones
 - 63) slow down for friends is very effective
 - 64) didn't watch
 - 65) lives are behind orange cones
 - 66) guy in camo (at end said Colorado?)
 - 67) round-a-bout directions, handicap, COVID-19 info, road construction
 - 68) 5 seconds/text
 - 69) Potholes
 - 70) 26% to[o] young to move to seat belt
 - 71) slow down for husbands
 - 72) Quick service, respectable staff
 - 73) The speed that I got in without an appointment and the politeness

Second Video Sequence, Video/Content, Source, Topics and Duration

Video/Content	Source	Topic(s)	Media Type	Duration (seconds)
Title screen	Researchers	Introduction	Static title	5
Buckle Up – Enough Reasons	MDT	Buckle up	Video	30
Did You Know: Centerline Rumble strips	MDT	Rumble strips	Infographic	10
Things to know about centerline rumble strips on 2-lane roads	MDT	Rumble strips	Infographic	10
Railroad Safety – Rural Signs	Colorado Department of Transportation, Colorado State Patrol	Railroad crossing safety	Video	15
SAM I am!	www.findmedriving.com	Slow vehicles	Infographic	10
Slow Down for the Curve	Clackamas County (Oregon)	Reduce speed when entering a horizontal curve	Video	45
Trivia Check-In! – question	Researchers	Impacts of texting on situational awareness	Trivia	10
Trivia Check-In! – answer	Researchers	Impacts of texting on situational awareness	Trivia	10
Flashing Yellow Light	MDT	The flashing yellow arrow treatment	Video	40
Trivia Check-In! – question	Researchers	The flashing yellow arrow treatment	Trivia	10
Trivia Check-In! – answer	Researchers	The flashing yellow arrow treatment	Trivia	5
MT Real ID 2021 02 EVEL	Montana Department of Justice Motor Vehicle Division	Real ID	Video	30
How many	National Center for Rural	Towards	Infographic	10

Video/Content	Source	Topic(s)	Media Type	Duration (seconds)
deaths on our roads are an acceptable number?	Road Safety	Zero Deaths		
The Right Seat – If You Love Them Enough – Play Place	NHTSA	Using the appropriate seat to ensure a child’s safety while in a motor vehicle	Video	30
Trivia Check-In! – question	Researchers	Using the appropriate seat to ensure a child’s safety while in a motor vehicle	Trivia	10
Trivia Check-In! – answer	Researchers	Using the appropriate seat to ensure a child’s safety while in a motor vehicle	Trivia	5
Work Zone Safety – the Signs	Connecticut Department of Transportation	Work zone safety	Video	30
Tell them you were running late. They’ll understand.	NHTSA	Speeding	Infographic	5
Credits	Researchers	Credits	Transition picture	10
Total Run Time				5 minutes, 25 seconds

Second Video Sequence, Intercept Surveys, April/May 2022 Data Collection

Date	Billings MVD	Bozeman CTO	Bozeman MVD	Helena CTO	Kalispell MVD
April 12, 2022			10:30- 3:30pm (29.8%)		
April 13, 2022			12:30- 4:30pm (32.4%)		
April 14, 2022		10:15- 1:15pm (18.5%)			
April 15, 2022					12:30- 4:30pm (71.4%)
April 19, 2022	7:30-11:30am (53.1%)		10:30- 3:30pm (38.6%)		12:30- 4:30pm (71.4%)
April 20, 2022		1-5pm (34.1%)			
April 21, 2022		10:15- 1:15pm (46.9%)			
April 22, 2022	12:30-4:30pm (57.9%)				8-12pm (62.5%)
April 25, 2022	12:30-4:30pm (52.9%)				9:30- 1:30pm (66.7%)
April 26, 2022		10:30- 3:30pm (25.5%)			
April 27, 2022					8-12pm (63.9%)
April 28, 2022			10:15- 1:15pm (47.4%)		12:30- 4:30pm (70.0%)
April 29, 2022	7:30-11:30am (73.7%)		7:30- 11:30am (43.8%)		
May 2, 2022		8-12pm (13.5%)			
May 3, 2022	12:30-4:30pm (46.4%)	10:15- 3:15pm (21.1%)			
May 4, 2022	2-4pm (58.3%)				
May 5, 2022			10:15- 1:15pm		

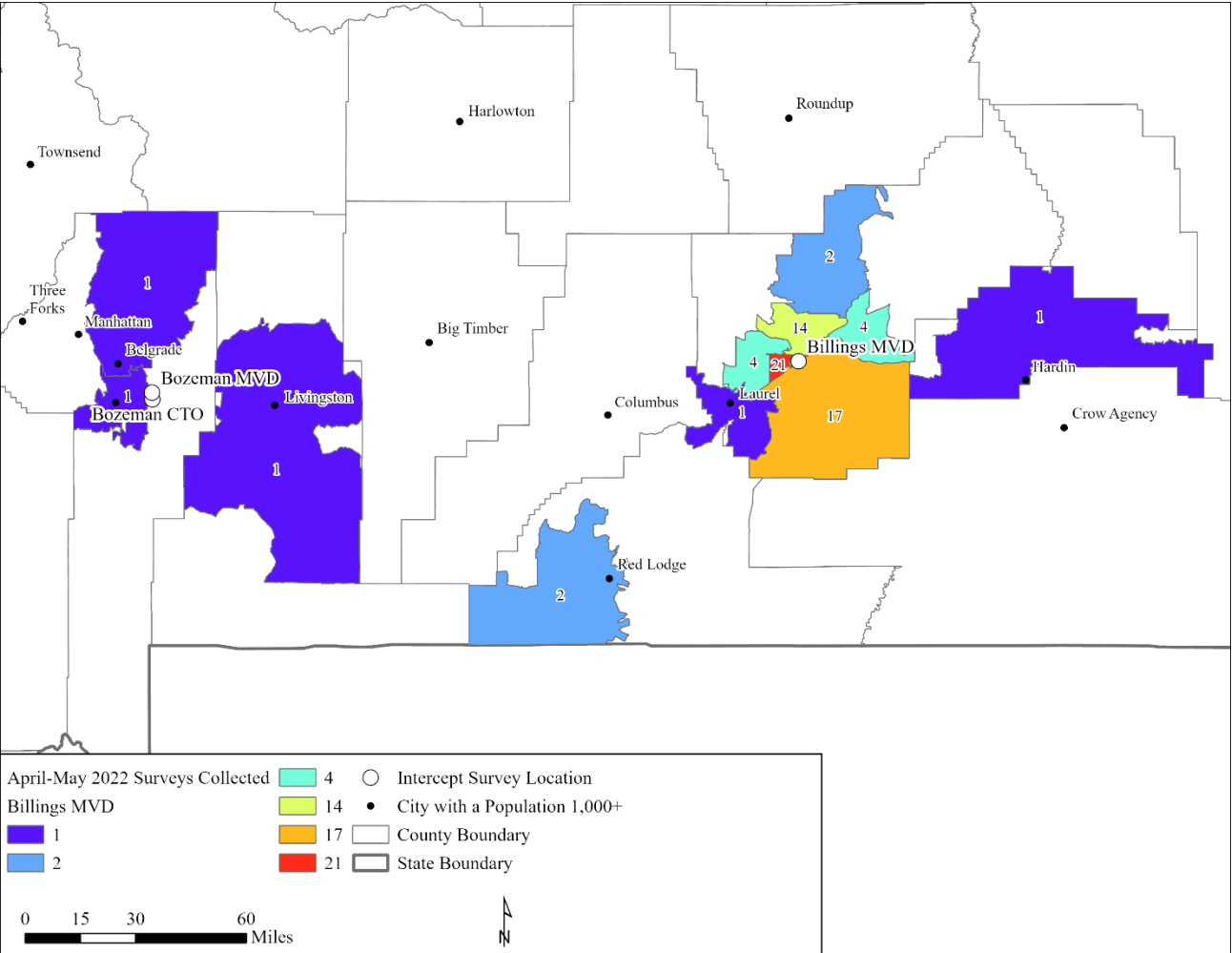
Date	Billings MVD	Bozeman CTO	Bozeman MVD	Helena CTO	Kalispell MVD
			(23.1%)		
May 6, 2022				7-11am (27.1%); 12-4pm (28.1%)	
May 9, 2022				8-12am (28.1%); 1- 5pm (33.3%)	
May 10, 2022				7-11am (30.3%); 1- 5pm (35.5%)	

Second Video Sequence, Intercept Surveys, June/July 2022 Data Collection

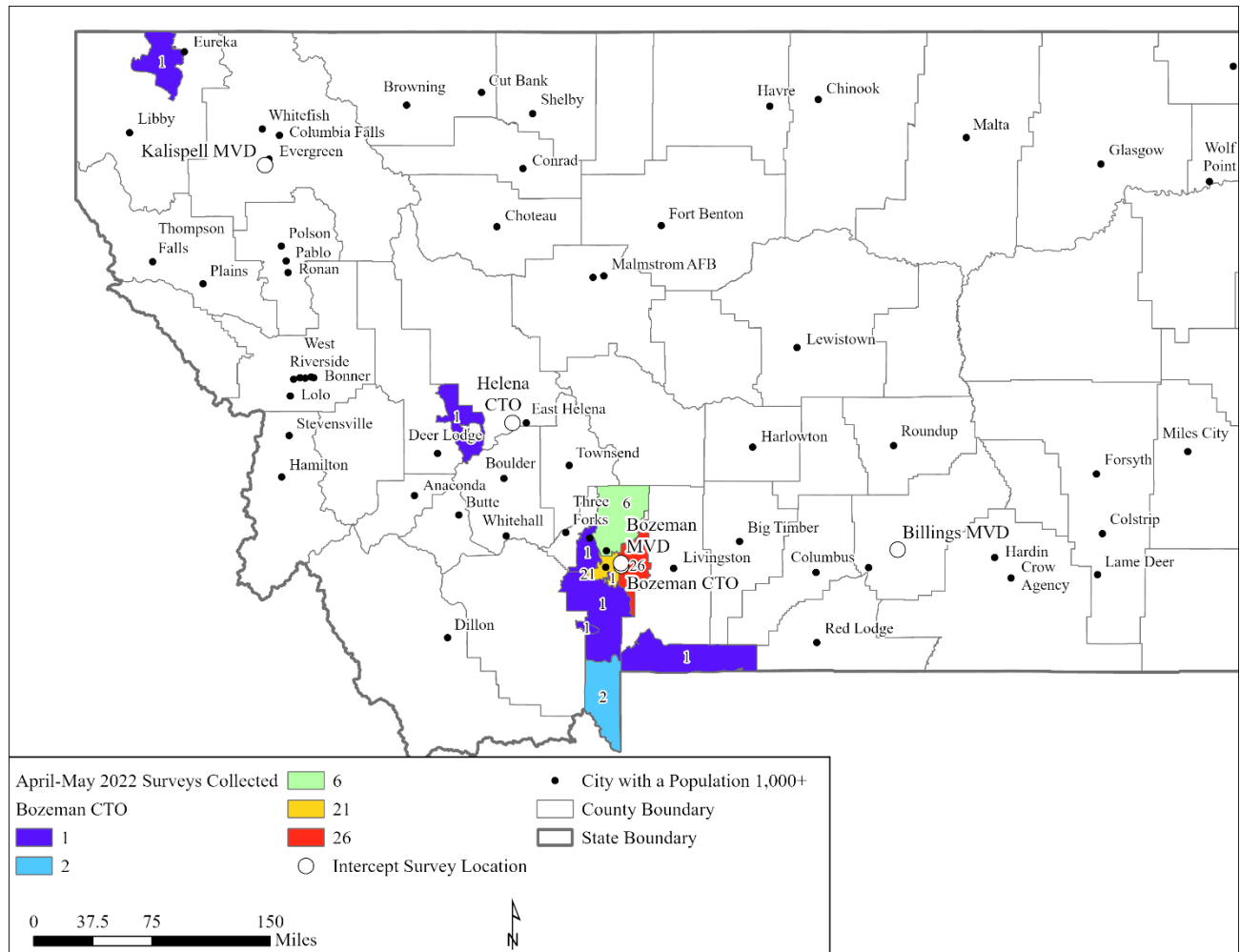
Date	Billings MVD	Bozeman CTO	Bozeman MVD	Helena CTO	Kalispell MVD
June 6, 2022	9-1pm (57.9%)	8-12pm (38.8%)			9-1pm (66.7%)
June 8, 2022	12:30-4:30pm (60.9%)				
June 9, 2022		1-5pm (29.2%)			
June 10, 2022		1-5pm (27.3%)			
June 14, 2022	7:30-11:30am (52.4%)	8-12pm (39.5%)			
June 16, 2022				7:30- 11:30am (41.7%); 1- 5pm (26.2%)	8-12pm (69.2%)
June 17, 2022	12:30-4:30pm (36.0%)		7:30- 11:30am (48.1%)		1-4:30pm (64.3%)
June 20, 2022				7:30- 11:30am (33.3%); 12:30- 4:30pm (31.3%)	1-4:30pm (66.7%)
June 21, 2022					8-12pm (64.7%)
June 22, 2022	7:30-11:30am (40.9%)	1-5pm (21.7%)			
June 23, 2022	12:30-4:30pm (37.5%)	8-12pm (32.4%)			
June 24, 2022			7:30- 11:30am (39.1%)		
June 27, 2022			12:30- 4:30pm (23.1%)		
June 28, 2022			12:30- 4:30pm (23.8%)	7:30- 11:30am (38.2%); 1- 5pm (45.2%)	
June 29, 2022					1:00- 4:30pm (46.7%)

Date	Billings MVD	Bozeman CTO	Bozeman MVD	Helena CTO	Kalispell MVD
June 30, 2022			7:30-11:30 (48.3%)		
July 5, 2022			7:30- 11:30am (52.9%)		

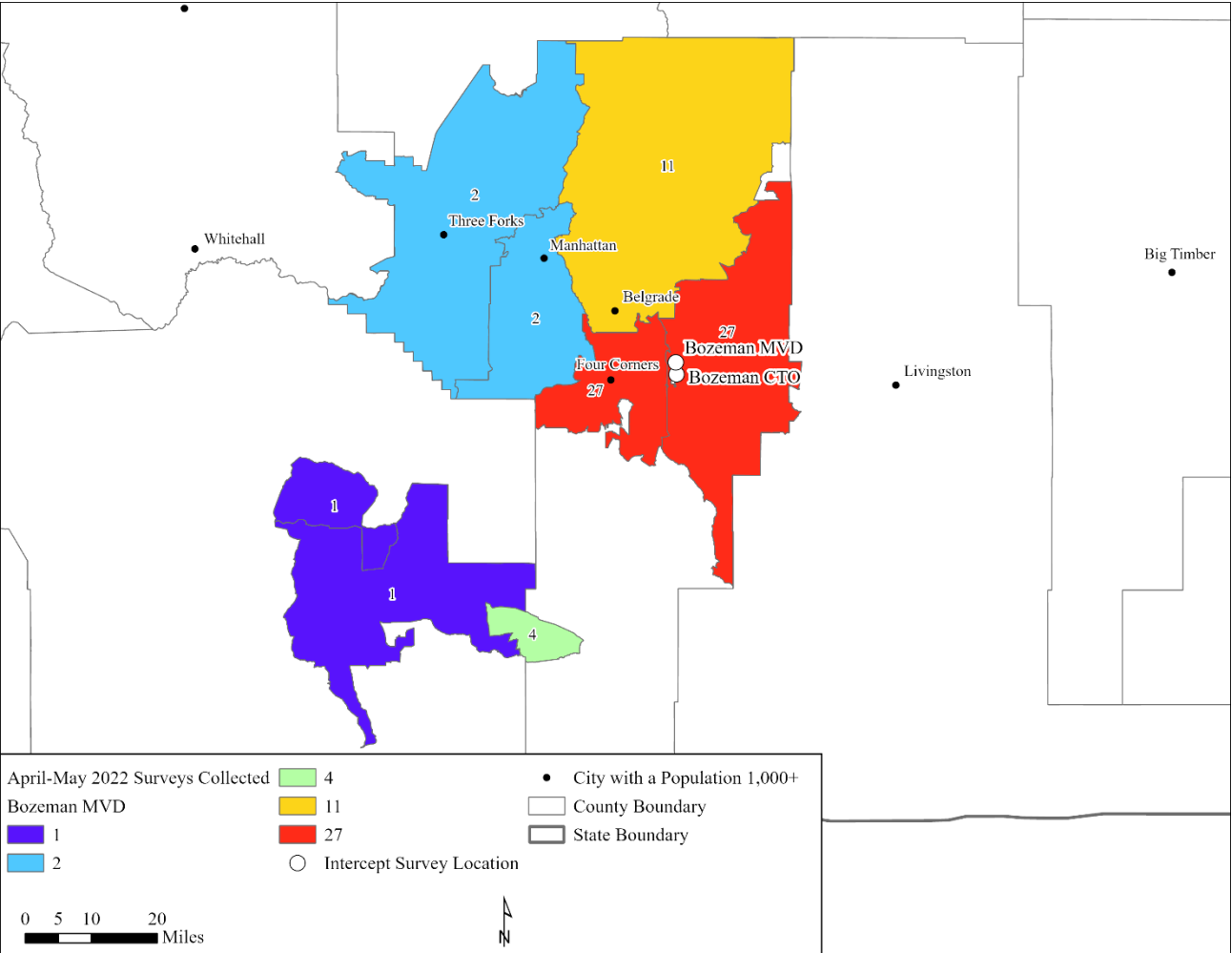
Second Video Sequence, Intercept Surveys, April/May, Billings MVD



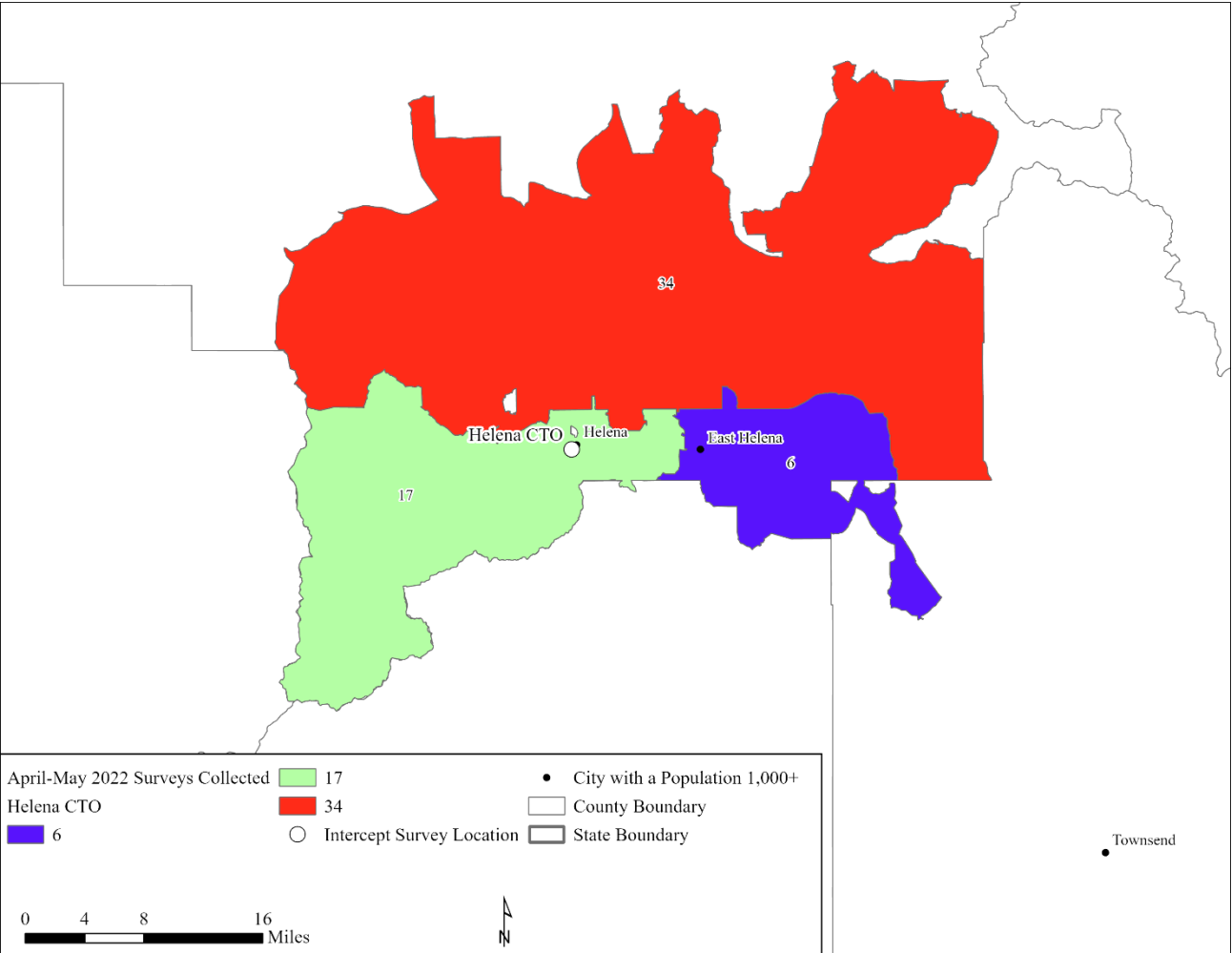
Second Video Sequence, Intercept Surveys, April/May, Bozeman CTO



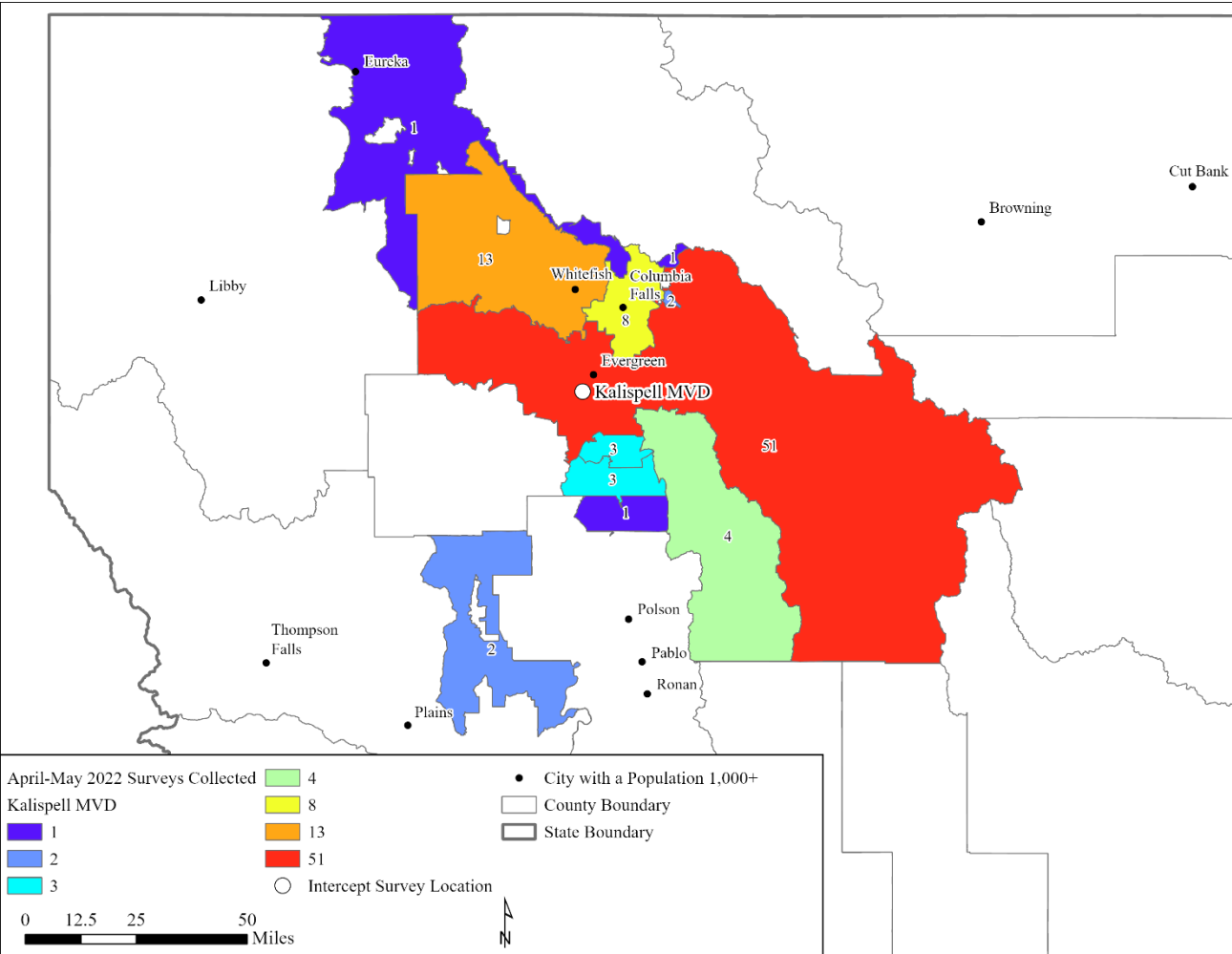
Second Video Sequence, Intercept Surveys, April/May, Bozeman MVD



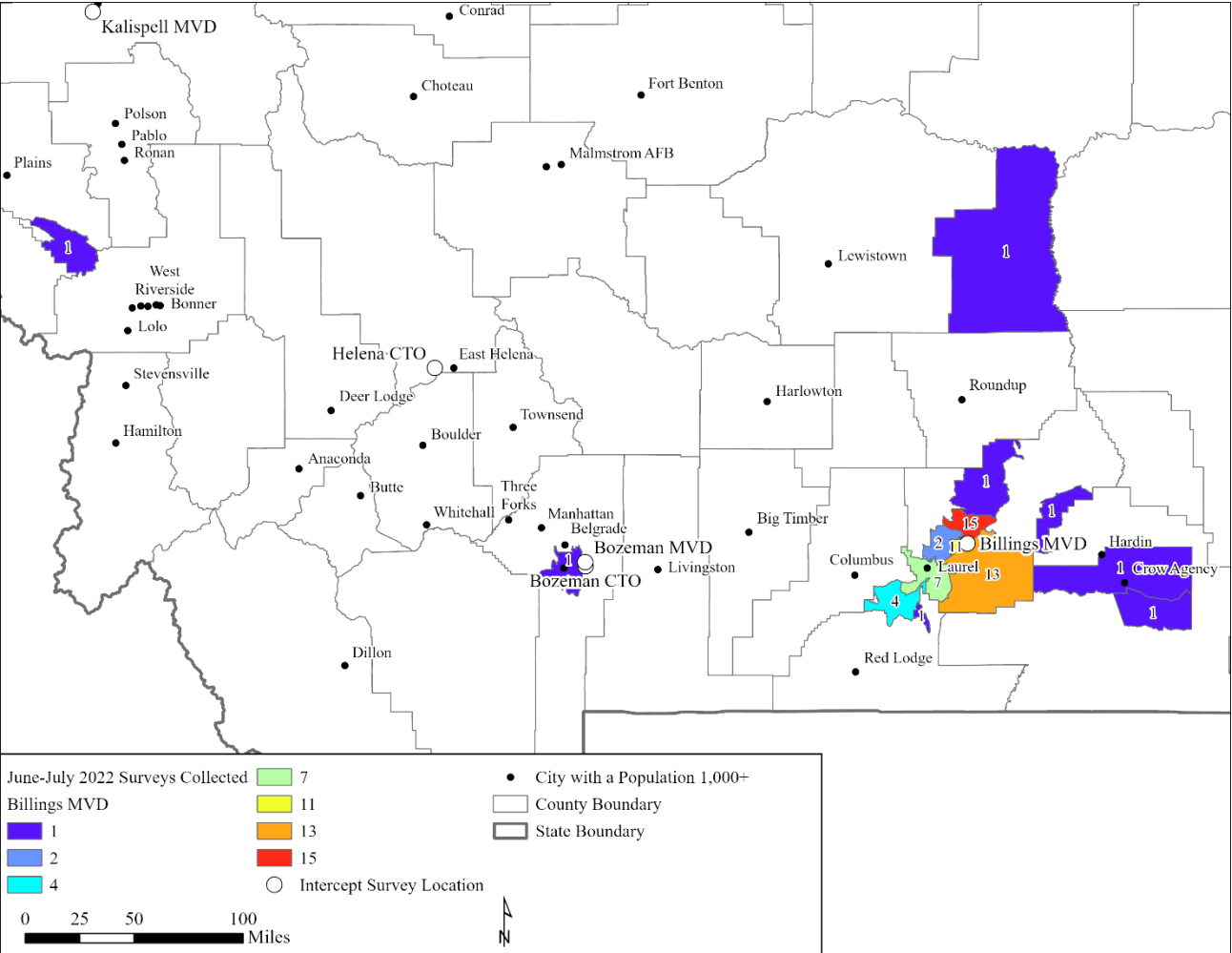
Second Video Sequence, Intercept Surveys, April/May, Helena CTO



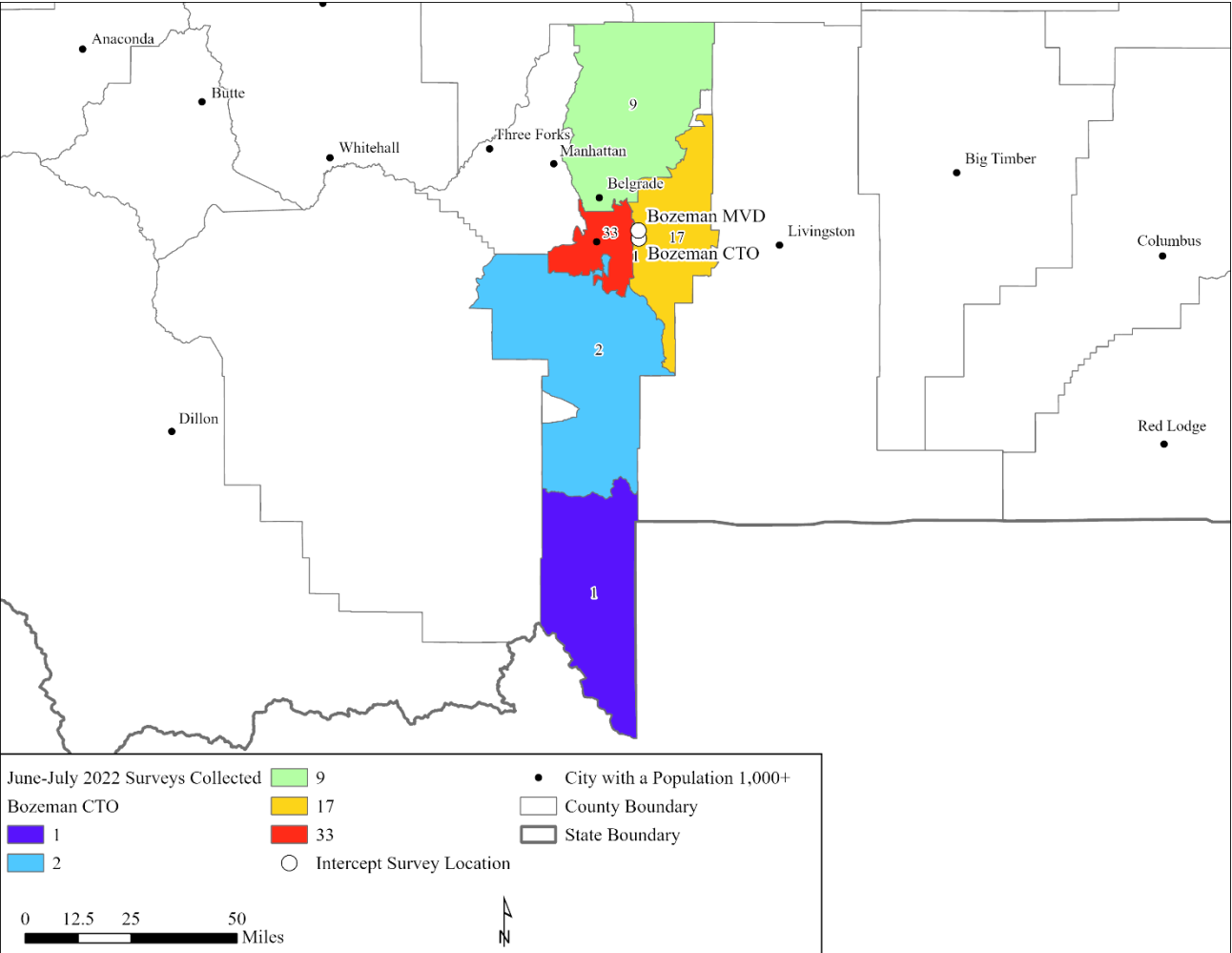
Second Video Sequence, Intercept Surveys, April/May, Kalispell MVD



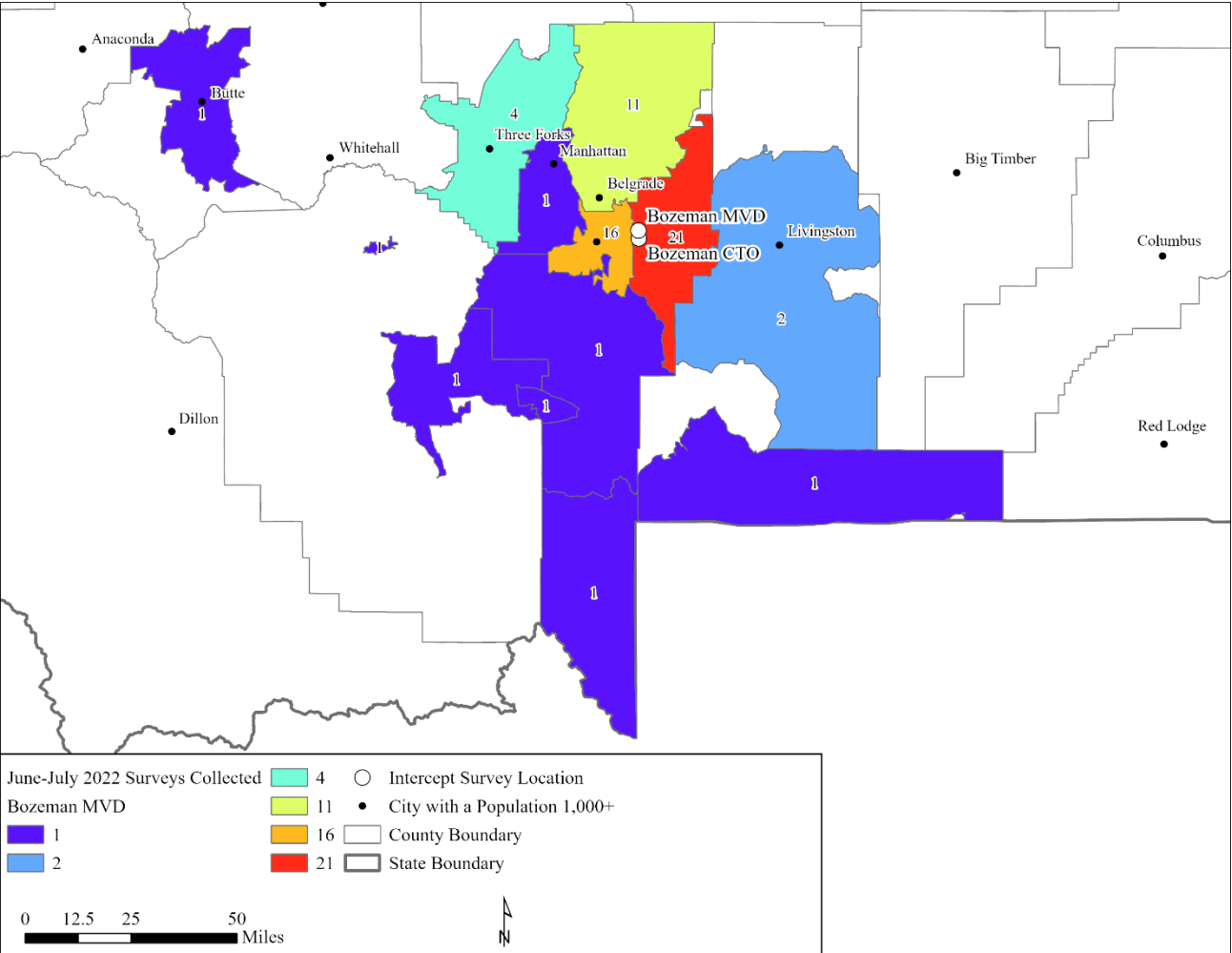
Second Video Sequence, Intercept Surveys, June/July, Billings MVD



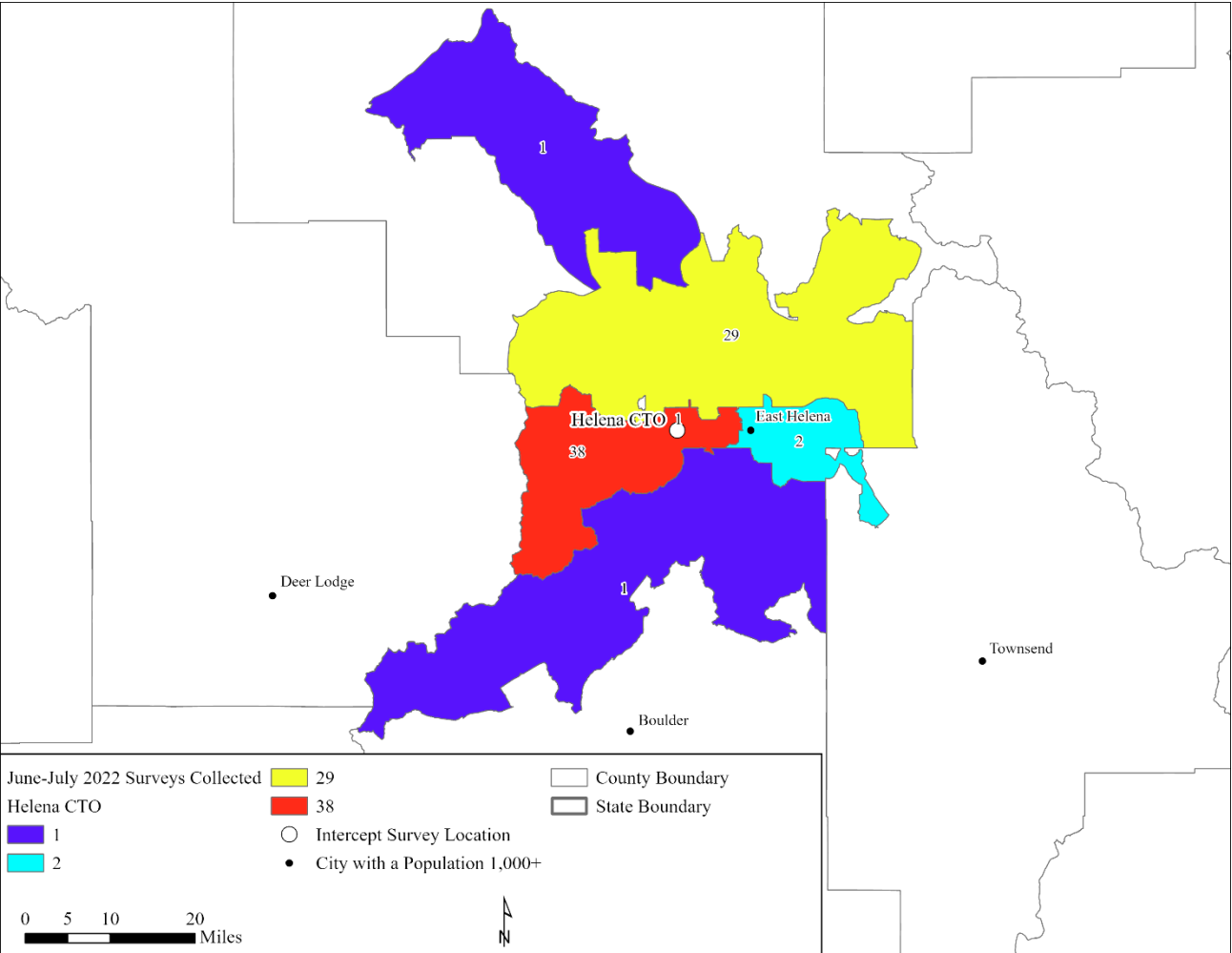
Second Video Sequence, Intercept Surveys, June/July, Bozeman CTO



Second Video Sequence, Intercept Surveys, June/July, Bozeman MVD



Second Video Sequence, Intercept Surveys, June/July, Helena CTO



Second Video Sequence, Intercept Surveys, June/July, Kalispell MVD

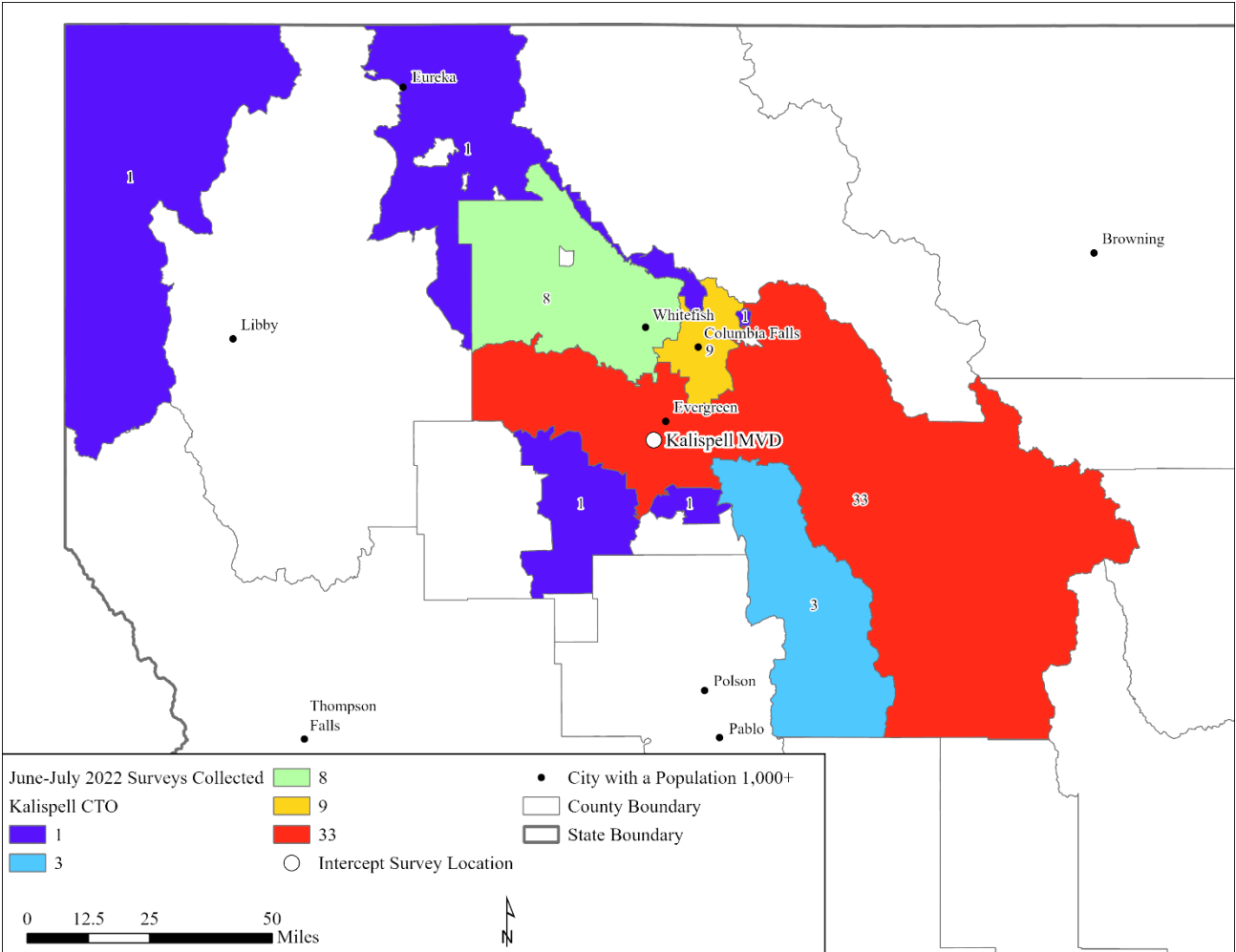


Table 51: Reported Wait Times by Video Sequence, Number and Percentage of Intercept Survey Respondents.

Video Sequence	n	Less Than 15 Minutes	15-30 Minutes	31-45 Minutes	46-60 Minutes	More Than 60 Minutes
First	921	262 (28%)	346 (38%)	128 (14%)	87 (9.4%)	98 (11%)
Second	684	184 (27%)	257 (38%)	134 (20%)	70 (10%)	39 (6%)
Total	1605	446 (28%)	603 (38%)	262 (16%)	157 (10%)	137 (9%)

Table 52: First video sequence, reported estimated duration of wait by data collection period.

Data Collection Period (First Video Sequence)	Less than 15 minutes	15-30 minutes	31-45 minutes	46-60 minutes	More than 60 minutes	Total
First (August/September)	133	171	61	44	65	474
Second (October/November)	129	175	67	43	33	447
TOTAL	262	346	128	87	98	921

Table 53: Second video sequence, reported estimated duration of wait by data collection period.

Data Collection Period (Second Video Sequence)	Less than 15 minutes	15-30 minutes	31-45 minutes	46-60 minutes	More than 60 minutes	Total
First (April/May)	112	143	64	28	14	361
Second (June/July)	72	114	70	42	25	323
TOTAL	184	257	134	70	39	684

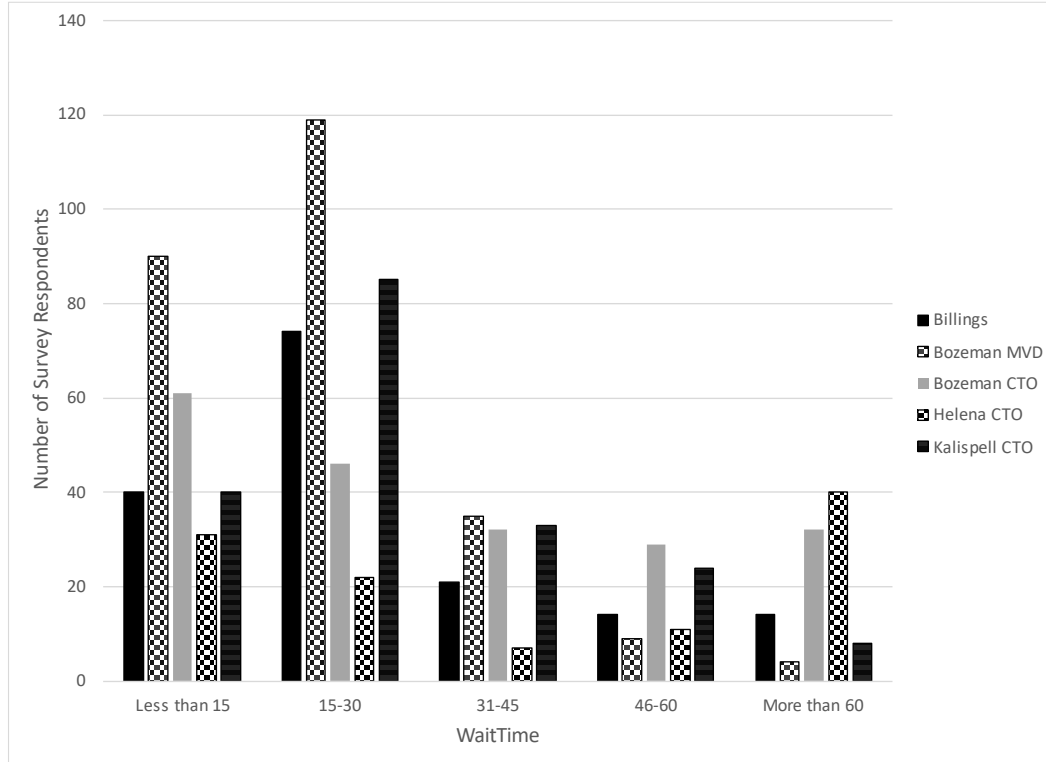


Figure 45: Wait times, by location, for the first video sequence.

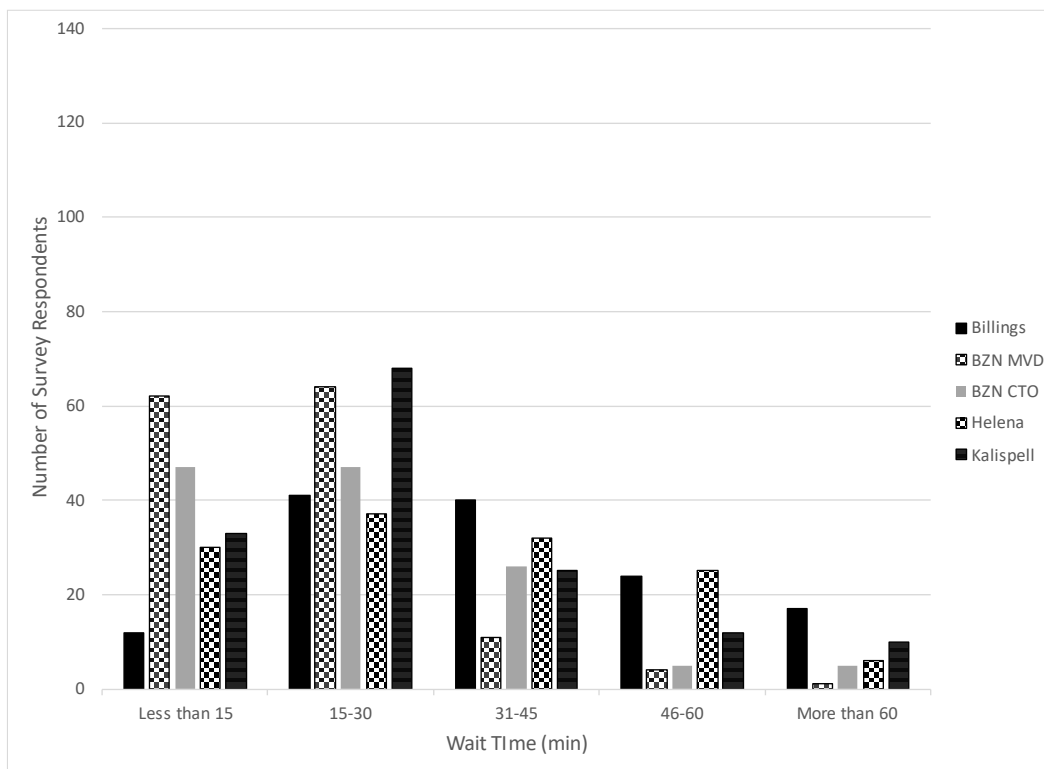


Figure 46: Wait times, by location, for the second video sequence.

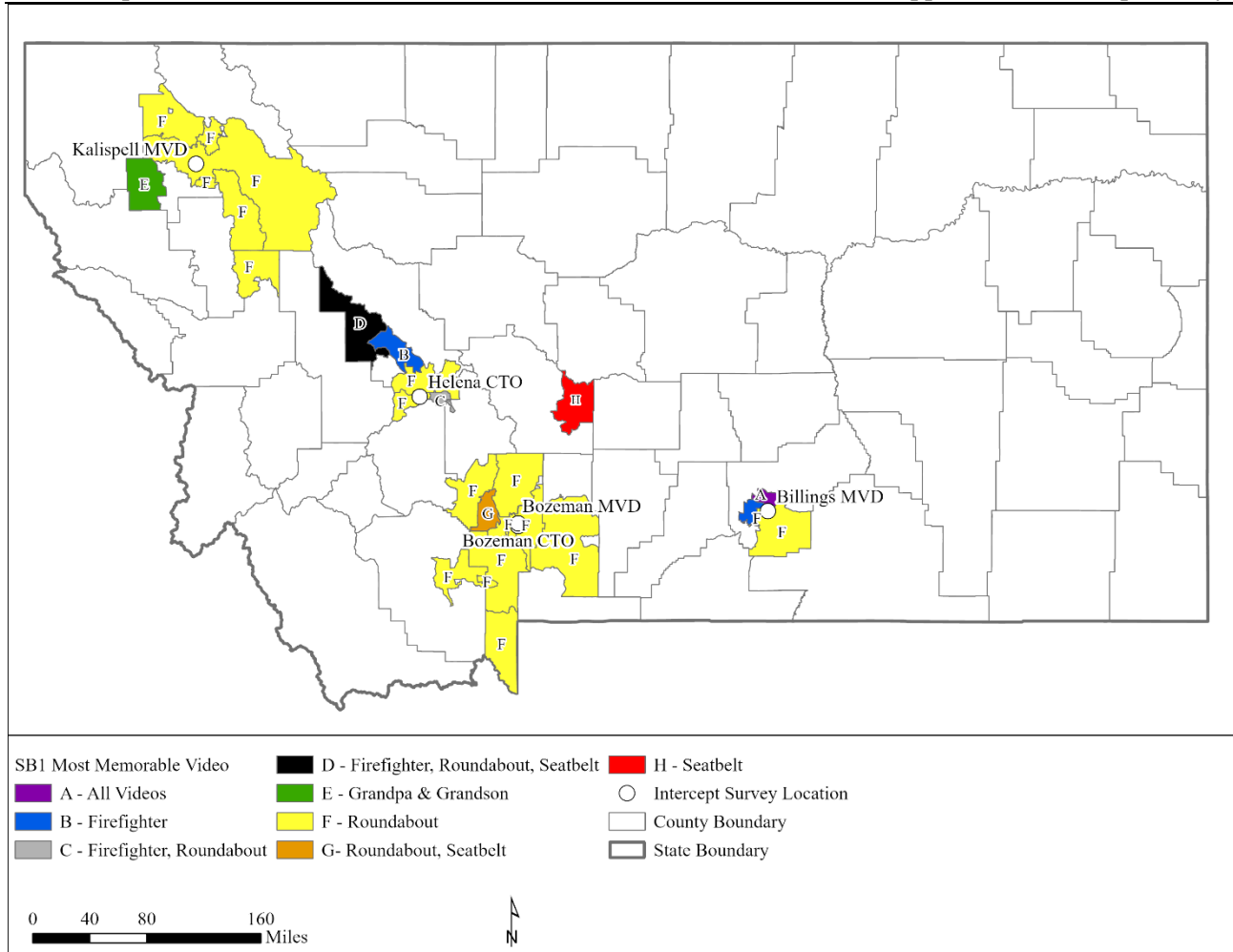


Figure 47. Most Recalled Video for Each Zip Code (Video Sequence 1)

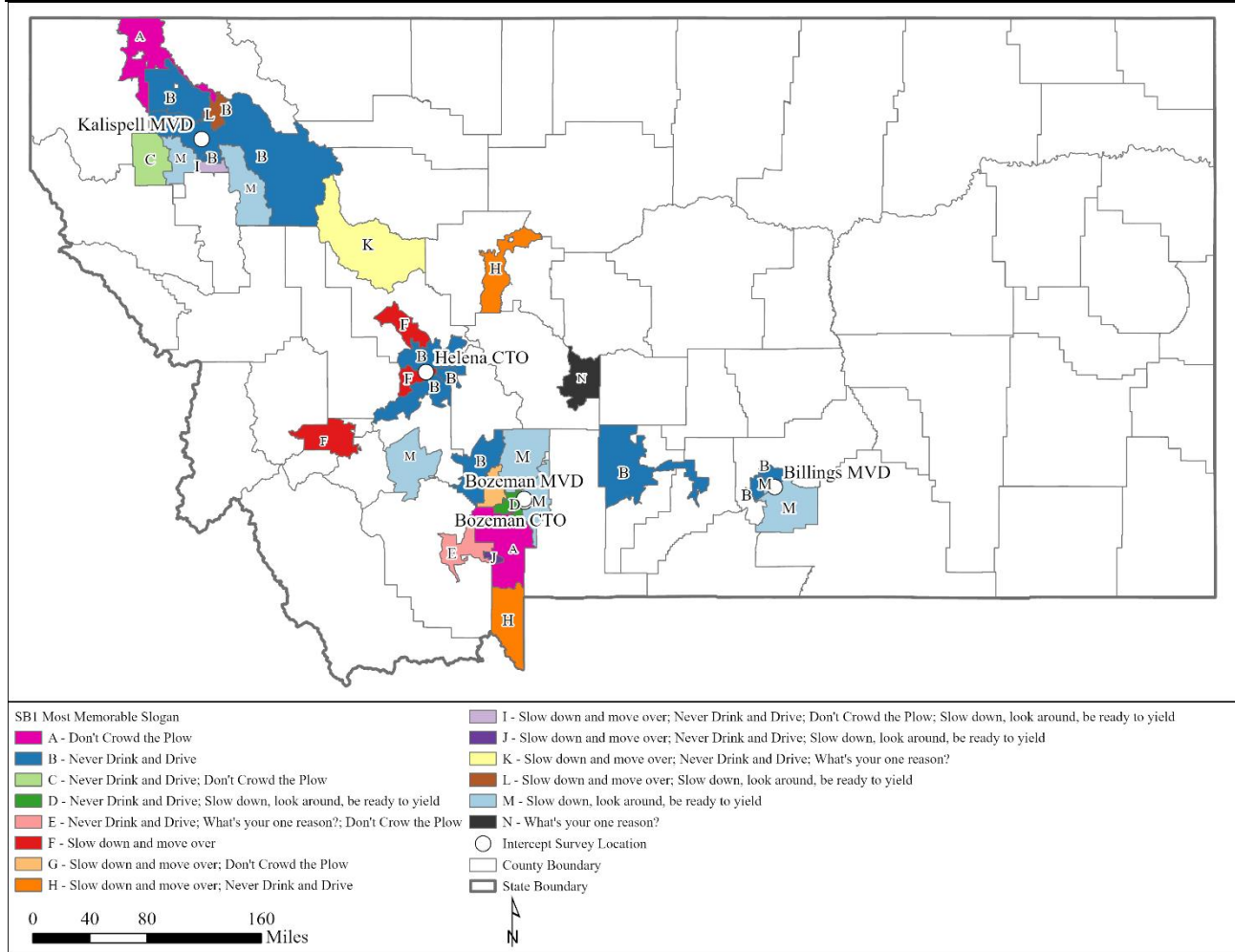
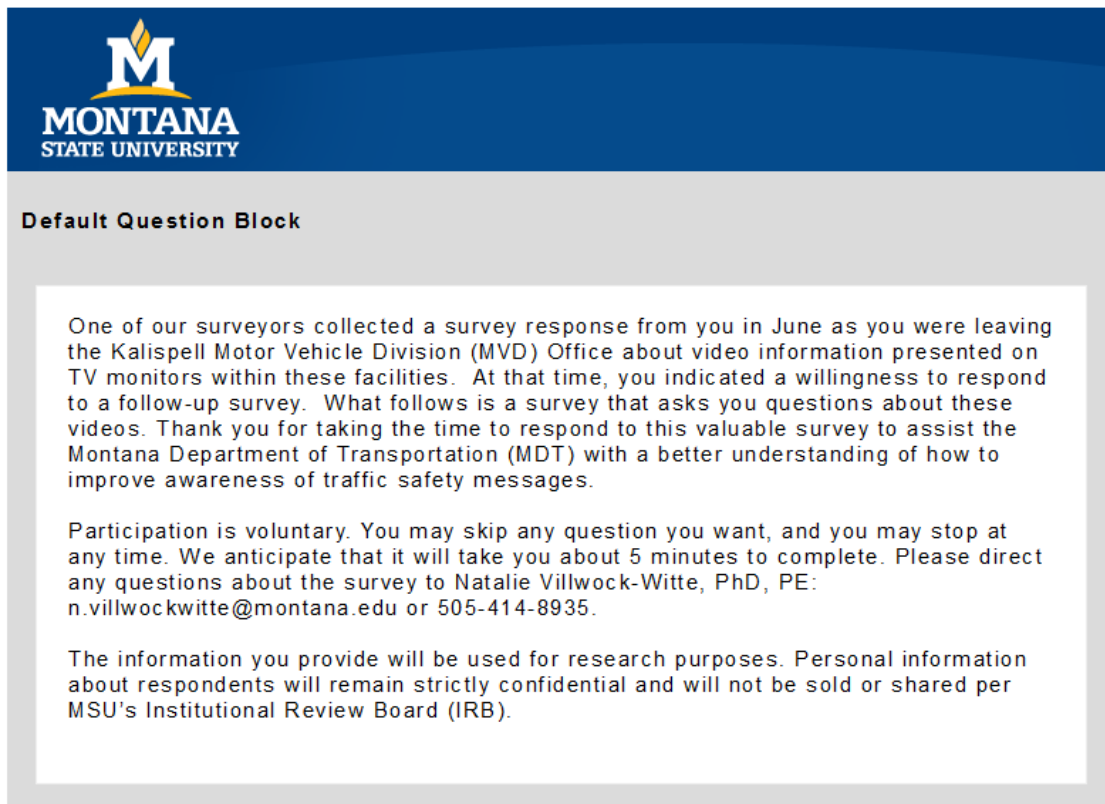


Figure 48. Most Recalled Slogan for Each Zip Code (Video Sequence 1)

9 APPENDIX B: Follow-up Surveys

Follow-up Survey, Online, Example



Please check all of the following that **you recall** based on your time in the Kalispell Motor Vehicle Division (MVD) Office.

☐☐☐☐

☐ I do not recall any of these videos.

Do any of the following statements relate to the videos that you remember watching at the Kalispell Motor Vehicle Division (MVD) Office (*please check all that apply*)?

☐ I learned something new.

☐ It made me think of my children.

☐ It made me think of my family members.

☐ It made me think of a time when I had a close call.

☐ Other

Did these videos change your beliefs about any of the following subjects (*please check all that apply*)?

☐ Wearing a seat belt

☐ Slowing down in work zones

☐ Driving through a signal with a flashing yellow arrow

☐ Slowing down for a curve

☐ The videos did not change my beliefs.

As a result of seeing the videos, using a scale of Strongly Agree to Strongly Disagree, please indicate your level of agreement with the following statements.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I will wear a seat belt.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will slow down for work zones.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I understand the meaning of a flashing yellow arrow.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will slow down for a curve.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please tell us your level of agreement with the following statement: After watching the videos at the Kalispell Motor Vehicle Division (MVD) Office, ***I have changed a driving behavior.***

- ☐ Strongly Agree
☐ Agree
☐ Neutral
☐ Disagree
☐ Strongly Disagree

Please tell us your level of agreement with the following statement: After watching the videos at the Kalispell Motor Vehicle Division (MVD) Office, ***I will be a safer driver.***

- ☐ Strongly Agree
☐ Agree
☐ Neutral
☐ Disagree
☐ Strongly Disagree

Did you share what you saw in the videos with anyone else?

- ☐ Yes
☐ No

What video or information did you share?

Thinking back to your time in the Kalispell Motor Vehicle Division (MVD) Office, do you recall seeing or reading any of the following slogans (*please check all that apply*):

- ☐ Check for trains
- ☐ SAM I AM!
- ☐ The right seat
- ☐ Slow down for the curve
- ☐ Stop speeding before it stops you
- ☐ I do not recall reading or seeing any of these slogans.

Thinking about the slogans that you may have seen or read, please check all of the following that apply:

- ☐ I learned something new.
- ☐ It made me think of my children.
- ☐ It made me think of my family members.
- ☐ It made me think of a time when I had a close call.
- ☐ Other

Did you discuss any of the slogans with someone else?

- ☐ Yes
- ☐ No

Which slogan did you discuss, and with whom?

Besides the Kalispell Motor Vehicle Division (MVD) Office, have you heard about any of the topics shown in the videos via another forum (i.e. a billboard, on the radio, on TV, at another office)? If so, could you please identify 1) **where** and 2) **what** the topic was?

With which racial group(s) do you most closely identify (*please select all that are applicable*)?

- ☐ American Indian/Alaska Native
- ☐ Asian
- ☐ White/Caucasian
- ☐ Black/African American
- ☐ Prefer not to answer

Are you of Hispanic or Latino origin or descent?

- ☐ Yes, Hispanic or Latino
- ☐ No, not Hispanic or Latino
- ☐ Prefer not to answer

What is the highest level of education that you have completed?

- ☐ 12th grade or lower (no diploma)
- ☐ High school graduate/GED
- ☐ Associate's degree or professional certification
- ☐ Bachelor's degree or higher
- ☐ Prefer not to answer

What is your annual household income?

- ☐ Less than \$20,000
- ☐ \$20,000 to less than \$50,000
- ☐ \$50,000 to less than \$75,000
- ☐ \$75,000 to less than \$100,000
- ☐ \$100,000 or more
- ☐ Prefer not to answer

Follow-Up Survey, Hard Copy, Example



January 26, 2022

One of our surveyors collected a survey response from you in October of 2021 as you were leaving the Kalispell Motor Vehicle Division Office about video information presented on TV monitors within these facilities. At that time, you indicated a willingness to respond to a follow-up survey. Enclosed, please find a survey that asks you questions about these videos. Thank you for taking the time to respond to this valuable survey to assist the Montana Department of Transportation (MDT) with a better understanding of how to improve awareness of traffic safety messages.

Participation is voluntary. You may skip any question you want, and you may stop at any time. We anticipate that it will take you about 5 minutes to complete. Please direct any questions about the survey to Natalie Villwock-Witte, PhD, PE: n.villwockwitte@montana.edu or 505-414-8935.

**Rural
Transportation
Research
Matters**





The information you provide will be used for research purposes. Personal information about respondents will remain strictly confidential and will not be sold or shared per MSU's Institutional Review Board (IRB).

Sincerely,

Natalie Villwock-Witte, PhD, P.E.
Western Transportation Institute
Montana State University
P.O. Box 174250
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n.villwockwitte@montana.edu
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wtioffice@montana.edu
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P.O. Box 174250
Bozeman,
MT 59717-4250

1. Please check all of the following that **you recall** based on your time in the Kalispell Motor Vehicle Division (MVD) Office.

<input type="checkbox"/>	
<input type="checkbox"/>	 when you see lights, vests, or reflectors
<input type="checkbox"/>	 if you travel around the united states there's
<input type="checkbox"/>	 Help reach the vision of zero deaths and zero serious injuries on Montana roadways
<input type="checkbox"/>	I do not recall any of these videos. → Go to Question 9.

2. Do any of the following statements relate to the videos that you remember watching at the Kalispell MVD Office (*please check all that apply*)?

- ☐ I learned something new.
☐ It made me think of my children.
☐ It made me think of my family members.
☐ It made me think of a time when I had a close call.
☐ Other _____

3. Did these videos change your beliefs about any of the following subjects (*please check all that apply*)?

- ☐ Obtaining a sober ride home
☐ Wearing a seat belt
☐ Slowing down and moving over for emergency responders.
☐ I am more confident in driving through a roundabout.
☐ The videos did not change my beliefs.

4. As a result of seeing the videos, using a scale of Strongly Agree to Strongly Disagree, please indicate your level of agreement with the following statements.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I will obtain a sober ride home.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will wear a seat belt.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will slow down and move over for emergency responders.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I see the benefit of roundabouts for reducing severe crashes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. Please tell us your level of agreement with the following statement: After watching the videos at the Kalispell MVD Office, ***I have changed a driving behavior.***

- ☐ Strongly Agree
☐ Agree
☐ Neutral
☐ Disagree
☐ Strongly Disagree

6. Please tell us your level of agreement with the following statement: After watching the videos at the Kalispell MVD Office, *I will be a safer driver.*
- ☐ Strongly Agree
 - ☐ Agree
 - ☐ Neutral
 - ☐ Disagree
 - ☐ Strongly Disagree
7. Did you share what you saw in the videos with anyone else?
- ☐ Yes
 - ☐ No → **Go to Question 9.**
8. What video or information did you share?
- _____
- _____
9. Thinking back to your time in the Kalispell MVD Office, do you recall seeing or reading any of the following slogans (*please check all that apply*):
- ☐ Slow down and move over
 - ☐ Never drink and drive
 - ☐ What's your one reason?
 - ☐ Don't crowd the plow
 - ☐ Slow down, look around, be ready to yield
 - ☐ I do not recall reading or seeing any of these slogans. → **Go to Question 14.**
10. Thinking about the slogans that you may have seen or read, please check all of the following that apply:
- ☐ I learned something new.
 - ☐ It made me think of my children.
 - ☐ It made me think of my family members.
 - ☐ It made me think of a time when I had a close call.
 - ☐ Other _____
- _____
11. Did you discuss the slogans with someone else?
- ☐ Yes
 - ☐ No → **Go to Question 14.**

12. Which slogan did you discuss, and with whom?

13. Besides the Kalispell MVD Office, have you heard about any of the topics shown in the videos via another forum (i.e. a billboard, on the radio, on TV, at another office)? If so, could you please identify 1) **where**, and 2) **what** the topic was?

14. With which racial group(s) do you most closely identify (*please select all that are applicable*)?

- ☐ American Indian/Alaska Native
- ☐ Asian
- ☐ White/Caucasian
- ☐ Black/African American
- ☐ Prefer not to answer

15. Are you of Hispanic or Latino origin or descent?

- ☐ Yes, Hispanic or Latino
- ☐ No, not Hispanic or Latino
- ☐ Prefer not to answer

16. What is the highest level of education that you have completed?

- ☐ 12th grade or lower (no diploma)
- ☐ High school graduate/GED
- ☐ Associate's degree or professional certification
- ☐ Bachelor's degree or higher
- ☐ Prefer not to answer

17. What is your annual household income?

- ☐ Less than \$20,000
- ☐ \$20,000 to less than \$50,000
- ☐ \$50,000 to less than \$75,000
- ☐ \$75,000 to less than \$100,000
- ☐ \$100,000 or more
- ☐ Prefer not to answer

We thank you for the time you spent completing the survey. Please return the finished survey in the provided envelope. Postage has been provided.

Table 54: Number of completed follow-up surveys as compared with those who stated a willingness to complete one for the first video sequence.

First Data Collection Period (August/September 2021)		
Location	Success Rate	Percentage
Billings MVD	0/3	0%
Bozeman CTO	7/15	47%
Bozeman MVD	2/6	33%
Helena CTO	3/9	33%
Kalispell MVD	1/6	17%
Second Data Collection Period (October/November 2021)		
Location	Success Rate	Percentage
Billings MVD	0/1	0%
Bozeman CTO	3/12	25%
Bozeman MVD	5/16	31%
Helena CTO	1/8	13%
Kalispell MVD	3/4	21%

Table 55: Number of completed follow-up surveys as compared with those who stated a willingness to complete one for the second video sequence.

First Data Collection Period (April/May 2022)		
Location	Success Rate	Percentage
Billings MVD	5/24	21%
Bozeman CTO	1/10	10%
Bozeman MVD	2/7	29%
Helena CTO	5/16	31%
Kalispell MVD	1/8	13%
Second Data Collection Period (June/July 2022)		
Location	Success Rate	Percentage
Billings MVD	6/21	29%
Bozeman CTO	11/17	65%
Bozeman MVD	2/5	40%
Helena CTO	2/6	33%
Kalispell MVD	2/5	40%